Chemical Week

April 2, 1955

Price 35 cents

Prepare now to pay higher wages next year; Congress and unions join forces behind boost . . p. 18

"Do it yourself" is the trend as more and more papermakers produce their own chlorine . . p. 22

Brooklyn Poly's Mark sees basic approach elbowing out empirical attack on polymer problems . p. 36

Pfizer team probes low-cost fermentation to make industrial itaconic acid . . . . . p. 48

How are sales managers trimming expense fat without losing sales meat? Here's a rundown . . p. 60

A McGRAW-HILL PUB

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UNIVERSITY MICROFILMS IN
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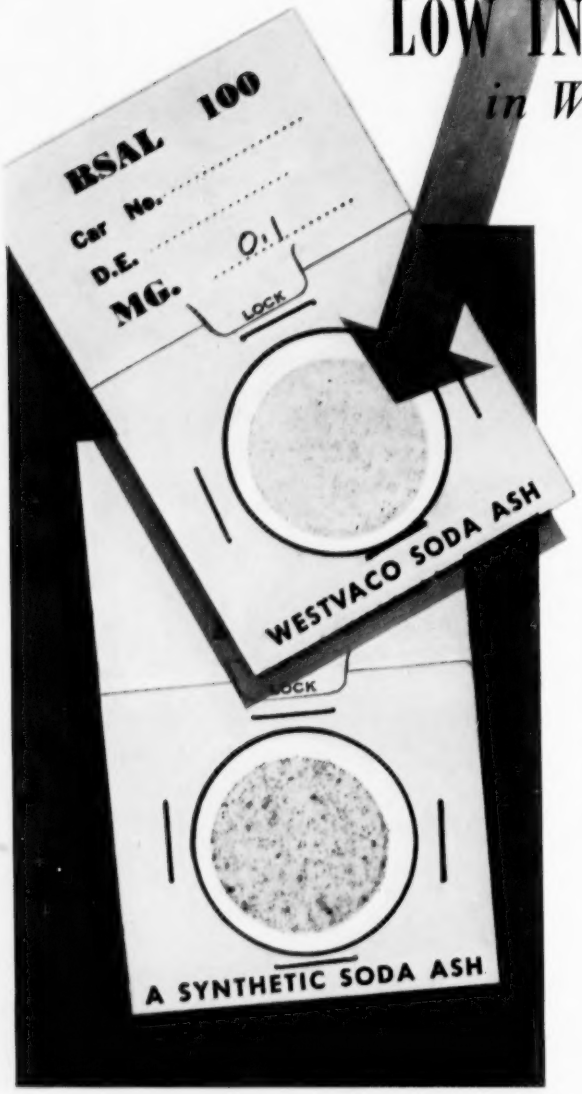
Milk-Pad Test Demonstrates

LOW INSOLUBLE RESIDUE

in Westvaco® Soda Ash



The American Public Health Association uses this test to determine the insoluble impurities in milk. But the milk-pad test also graphically shows the low insoluble residue in WESTVACO Soda Ash. There's a very simple "reason why" this is so!

To make WESTVACO Soda Ash, we mine thousands of tons of unbelievably pure trona underlying our Westvaco, Wyoming plant. Then we crush it and dissolve it. Right here insoluble impurities drop out. They never do get to the crystallizer or the calciner from which refined soda ash emerges as the end-product of our patented process.

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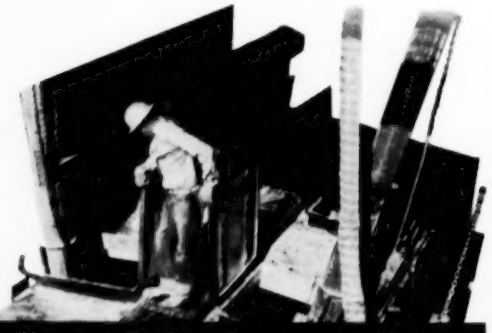
Users from the Mississippi Valley to the Panhandle to the Pacific benefit by this nearby source of high quality soda ash. May we send samples and quote?



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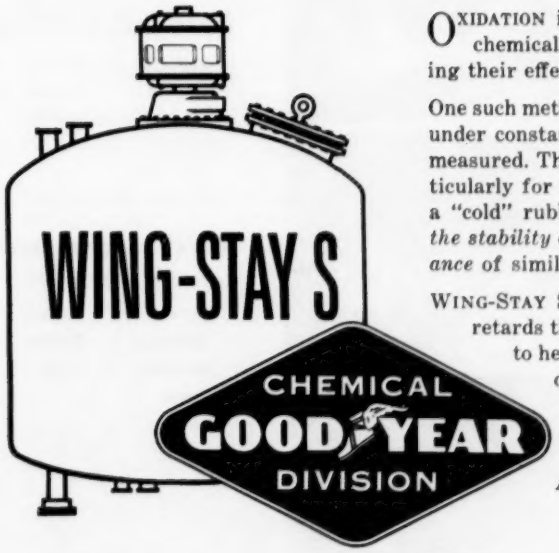

OXIDATION is an arch enemy of rubber. Antioxidants—additive chemicals designed to stop its attack—and methods of measuring their effectiveness are under constant development.

One such method is the "creep test" wherein a rubber ring is placed under constant tension and heat and its stress decay periodically measured. This test is currently considered the most reliable, particularly for GR-S vulcanizates. It is in this test that GR-S 1502, a "cold" rubber protected with WING-STAY S, exhibits *15 times the stability* of unprotected rubber and *three times the age-resistance* of similar rubbers containing nonstaining antioxidants.

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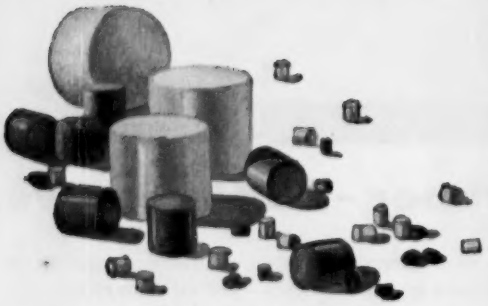

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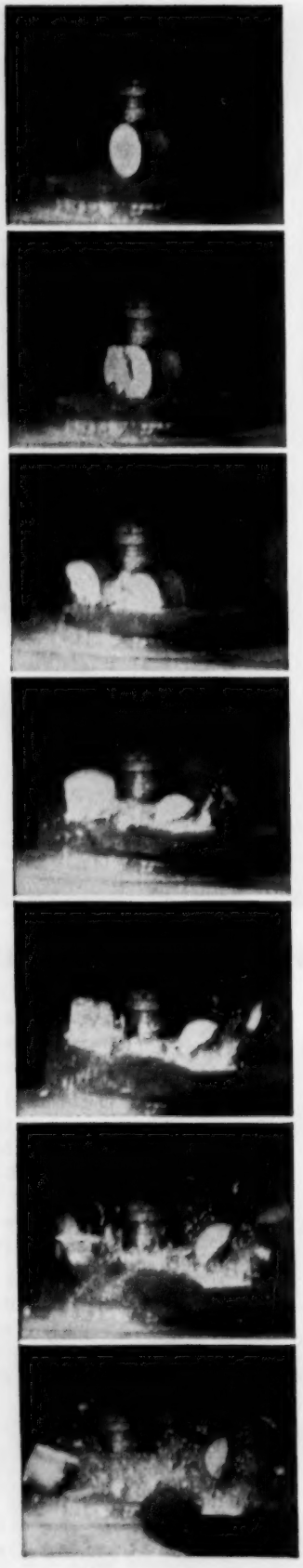

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Chemical Week

Volume 76 **APRIL 2, 1955** Number 14

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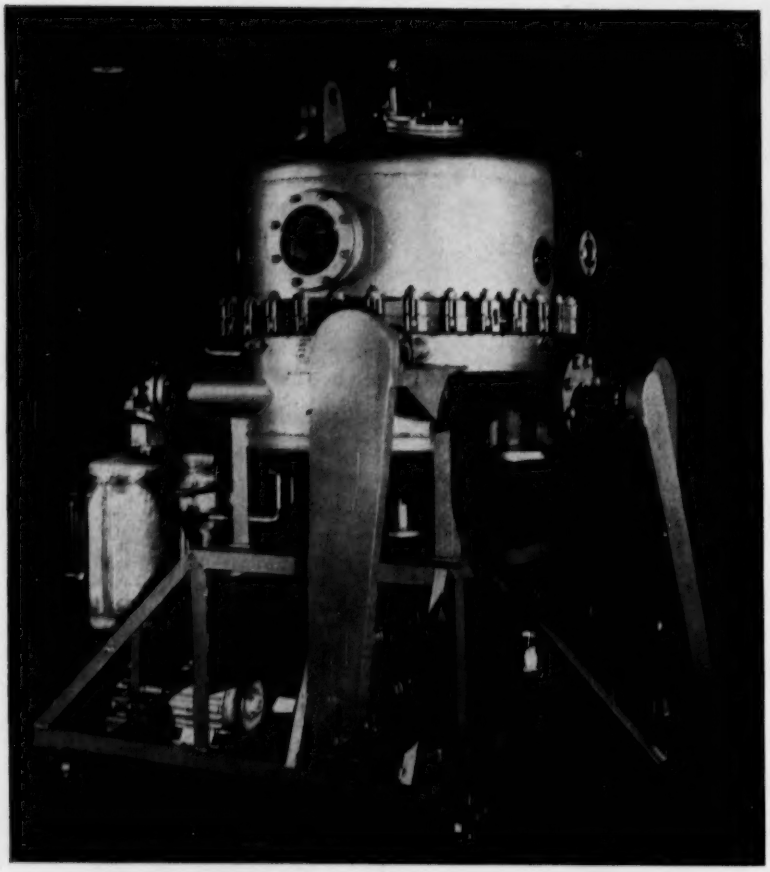

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OPINION.....

Human Relations

To THE EDITOR: The CW Report on Human Relations authored by Aaron Levenstein (*March 19*) was a masterpiece . . . We heartily congratulate the author on his . . . perspicacity into the problems of management and labor; particularly those problems confronting the more technical phases of industry.

Future articles of this type will be heartily appreciated by all those interested in better relations between the technician and the nontechnical worker . . .

R. B. HOWES
President
Research Laboratories of Colorado, Inc.
Newtown, O.

Food for Thought

To THE EDITOR: I have just finished reading the CW Report, "Human Relations: The Forgotten Function of Management" (*March 19*) . . . It is well written, and offers an accurate account of some problems that must be met by the management of all industrial concerns at this time. The report offers provocative food for thought, and the illustrations serve to make the article very readable, as well as forceful . . .

Also appreciated . . . were the articles on interesting technological developments, which I feel are too often ignored in favor of less important nontechnical problems . . .

ROBERT L. VAN ETTEN
Chicago

Ignored Potential

To THE EDITOR: I agree with the author of the letter (*March 19*) who points out that the real reason there's a shortage of competent salesmen is that some men have committed the "unpardonable sin" of getting a little older.

The sin lies, to my mind, not in

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N. Y.

caustic soda—

which strength should you buy?

Here are the facts to help you decide which saves you more—50% or 73%

Can you save by switching from 50 to 73% liquid caustic? Your answer will depend on:

1. Your caustic soda freight rate.
2. Your facilities for handling caustic.
3. The amount of caustic you use.

Advantages of 73% liquid

1. With 73%, there is a substantial saving in freight charges. 63% less water is shipped per unit weight of dry caustic soda.
2. You will place fewer orders. This cuts down on your billing work.

Disadvantages of 73% liquid

1. It is priced $2.00 more per ton (dry basis) than 50% because of higher manufacturing costs.
2. If you store it as 73% liquid, you will need heated, nickel-clad steel storage tanks.
3. If you dilute 73% to 50% while unloading, you will need a cooler and other equipment. This represents a considerable investment which can be reduced if you have suitable equipment already on hand.

Use this table to see if you can save with 73%

Use the table at right to find your approximate saving on freight charges with 73% liquid caustic. The table balances two cost factors . . . lower freight charges and the higher initial price of 73% liquid caustic.

To estimate your yearly savings, multiply the figure in the right-hand column which applies to you by your annual consumption in tons (dry basis).

From these savings you will have to deduct the cost of equipment for diluting to 50% while unloading.

Freight rate per hundred weight in cents (including taxes)	*Net savings per ton (dry basis) in dollars*
5	minus 1.40
10	minus .80
15	minus .10
16	0
20	.60
25	1.20
30	1.80
35	2.40
40	3.00
45	3.70

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You gain much by choosing the *right* strength for your conditions. In coming to a decision, why not give yourself the advantage of unbiased expert technical help? A call to your nearest Hooker sales office puts at your disposal, without obligation, the experience gained in 50 years of supplying caustic soda to industry.

Your Hooker technical service man can show you what equipment you need for converting, and help you figure your exact savings. Why not phone or write him today at the nearest Hooker office?

* * *

"CAUSTIC SODA BUYER'S GUIDE" is the title of a new pocket-size booklet we will be glad to send you. Contains helpful facts on the economics of 50% and 73% solutions; other forms of caustic soda; capacities of tank cars and other containers; useful shipping information. Write for a copy.

4-1955

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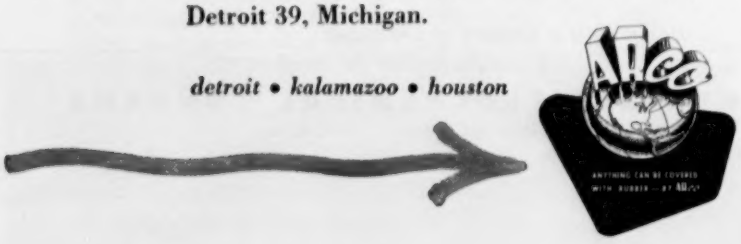


OPINION . . . . . .

growing old, but in the evil conspiracy among employers to throttle ambition, pride and livelihood of many thousands of men in their prime, by the refusal to give them employment.

It is an anomaly that professional men, congressmen, judges and even heads of major business organizations find their greatest usefulness *after* 40 —and well into the 60s and 70s . . .

Older men have a deeper sense of values, of integrity, of the limitations in overhead, sales costs and over-all requirements. Given good health, a lively imagination (youth has no monopoly on vision and initiative), we prefer salesmen who have passed the age of frivolity, bars and women. The older men, too, have a better sense of proportion concerning expense accounts and their relation to sales. Buyers have a deeper respect for men of experience.

As one businessman said: "I have no patience with the youngsters calling themselves salesmen. Seven in 10 have little if any real knowledge of their product. But they try to take up my time."

There still is a valuable service to be rendered by us old codgers (I am a youngster of 73) and the firm that passes the older men by is losing out on an important potential . . .

H. Tom Collord
President
Lynx-Line Gun Products Division,
Detroit

DATES AHEAD . . .

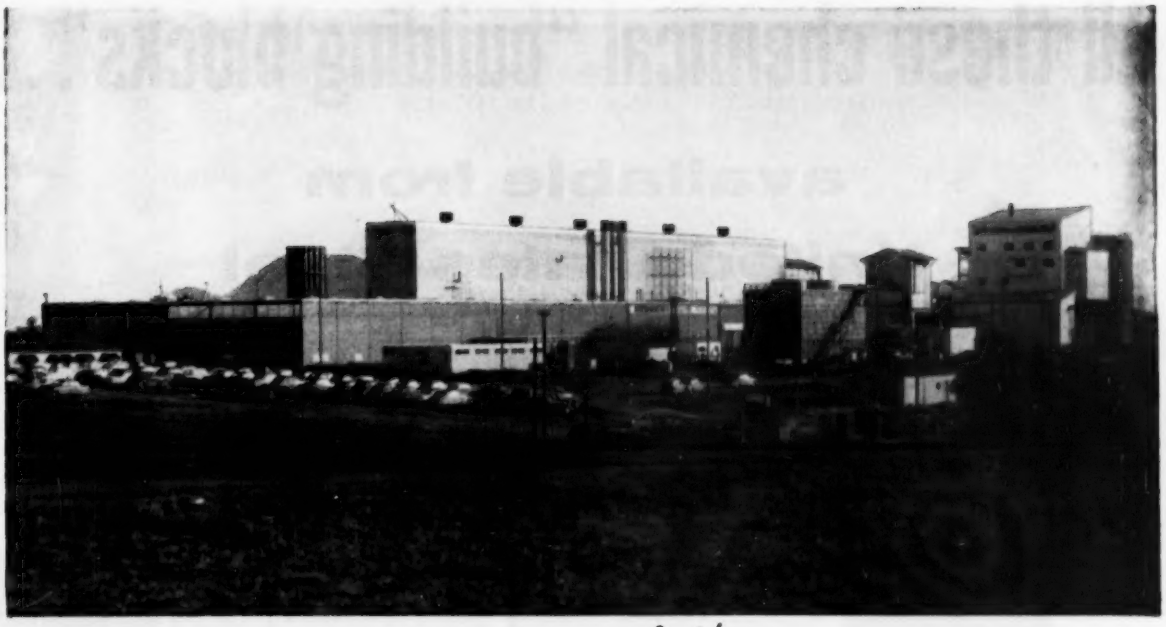
American Drug Manufacturers' Assn., annual meeting, Boca Raton Club, Boca Raton, Fla., April 13-14.

Conference on Biological Waste Treatment, Manhattan College, New York, April 13-15.

German Industries Fair, Hanover, West Germany, April 24-May 3.

Index Available

Copies of the Chemical Week index for Vol. 75, July-Dec., 1954, are now available from Chemical Week, Reprint Dept., 330 W. 42nd St., New York 36, N. Y., free of charge. Subscribers not already on the mailing list to receive indexes will be added to the list upon application.



Lithium

Putting the "prod" in production . . .

Here's a bird's-eye view of the biggest step yet in meeting industry's continuing demand for Lithium. Lithium Corporation has put on stream a lithium plant with the largest potential capacity in the world. The $7,000,000.00 project located at Bessemer City, North Carolina is producing Lithium Carbonate and Lithium Hydroxide for industry at large.

Unique in the Lithium industry, Bessemer City is processing run-of-mine ore directly through its chemical plant, as well as concentrates. The former eliminates the once necessary step of first concentrating the ore. The plant treats company-owned deposits of spodumene ore reserves in the adjacent King's Mountain area. The concentrates are from Canadian sources. Coupled with the company's original plant at St. Louis Park, Minnesota, a substantial increase in present productive capacity of the lithium industry is assured.

• • •

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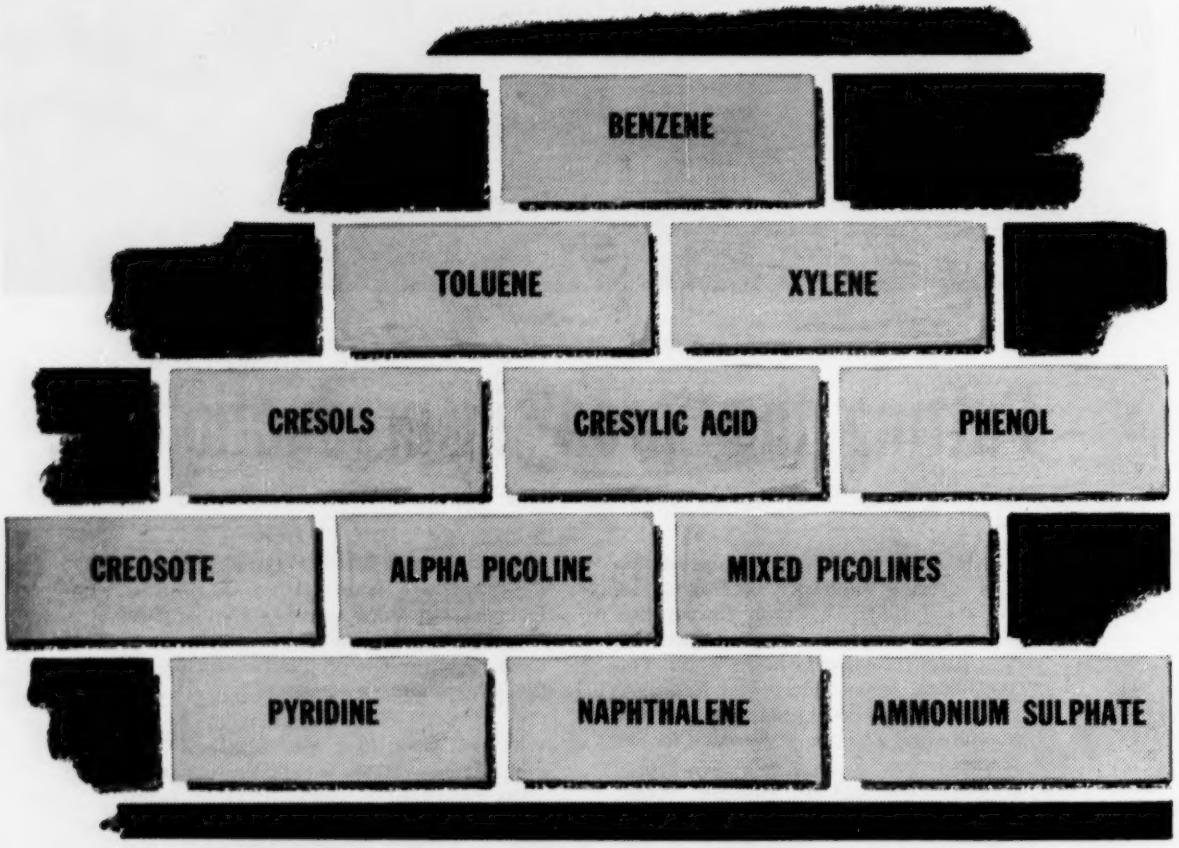

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USS Coal Chemicals

USS

UNITED STATES STEEL

NEWSLETTER

Earnings statements of chemical companies—clear across the board—will make pleasant conversation at stockholders' meetings this month. Reason: after a year of thrashing about without making much profits headway, the average chemical company is ranging 7-9% ahead of 1954 records. Du Pont, Allied, and Union Carbide all say they're earning "considerably" more than a year ago; the mining and metals group (which gained 2.4% in 1954) is gaining in dollar volume thanks to higher prices, greater sales. Among petrochemical companies, the word's equally encouraging. Demand for oil products (estimated to have risen 8% in the first two months of the year) is driving profits upward again; most companies are predicting increases "up to 10%" in net profits for the first quarter. Other predictions: Monsanto earnings up 10% this quarter; Dow, up 25% over year-ago rates.

•

Company purchases are getting in under the wire, too, are sure to stir up stockholder interest. Late acquisitions:

• Glidden's purchase of the assets of the Zapon industrial finishes division of Atlas Powder Co.—including all trademarks, patents, sales and technical staffs. Buying the division boosts Glidden's industrial coatings business significantly; sale takes Atlas out of a line not integrated with its major activities.

• Sinclair Oil and Gas Co.'s purchase of American Republics Corp. for $108 million, said to be the largest transaction of its kind involving oil and gas properties. Eight banks were involved in the financial transaction; property purchased includes 385 net producing oil wells and 39 gas wells.

•

Money talk is picking up around Washington, too. The National Science Foundation now seems likely to take a cut from the full $20-million Presidential budget request (*page 45*), has been allotted instead $12.5 million by a House committee for its general operations during the coming fiscal year.

•

Out of the Rubber Disposal Commission's negotiations, the government will also pick up extra dollars. Not only is there now a definite probability that the 25th of the 27 government-owned plants will be sold (*page 13*), but the 26th will also be in the operation. Publicker Industries has signed a three-year lease covering the alcohol-butadiene plant at Louisville, Ky., will pay the government $6/ton for every ton of butadiene produced ($1,000 monthly minimum). Publicker takes over next Monday (April 4), hopes to start production (using Cuban-blackstrap-based ethanol) within the next six months. The plant's been idle since Aug. '53.

•

The sugar lobby has started to roll against makers of saccharin and cyclamate (Sucaryl). Major basis of the campaign: a report of the National Sugar Council on synthetic sweeteners.

Says Rep. Edwin Willis (D., La.): "If we are not careful, our sugar . . . fats and oil producers may be driven out of their markets by the use of chemicals—chemicals that are nonnutritive and injurious to health. I think we should legislate to protect them. . . ."

More bills are piling up in Congressional hoppers for regulation of chemicals in food and cosmetics:

The new cosmetics bill introduced by Rep. Percy Priest (D., Tenn.) is believed to be the industry's answer to the Delaney cosmetics bill (*CW Newsletter, Feb. 26*). On the food front, at least two bills are in final draft stage. One, authored by food-and-drug-law specialist Charles Wesley Dunn, is considered an ultraconservative measure, calling for prior notification of the Food & Drug Administration. Another bill is being drafted by Rep. A. L. Miller (R., Neb.) and is patterned along the lines of his pesticide amendment.

•

First tolerance under that Miller pesticide amendment has now been issued by FDA. Up to 6 ppm. of Carbide and Carbon Chemicals' SES herbicide will be allowable on asparagus and strawberries.

•

Latest grant from ODM to Du Pont, a 90% tax write-off on a $40-million plant at Johnsonville, Tenn., to produce titanium sponge.

•

Richfield Oil is keeping quiet about it, but it looms as a likely producer of phthalic acid. If so, it will pioneer a process developed by Stanford Research Institute.

Essentially, it's a two-stage oxidation. In the first step, a mixture of xylenes is oxidized by air in the presence of a cobalt soap catalyst. Acetophenone (formed from ethyl benzene present in the feed stock) is removed and the catalyst is regenerated preparatory to recycling.

•

Despite all that chemical companies have done to curb air pollution, it seems they're still regarded as principal offenders.

That's how it looks to regulatory officials in some 40 major U.S. cities who took part in a survey conducted by Pendray & Co., New York public relations counseling firm. In order of frequency of mention, these kinds of plants were listed as prime objects of complaints about fumes and odors: chemicals, vehicles, paint and varnish, food processing. Farther down on the list: plastics, pharmaceuticals, soaps and detergents.

About 62% of the officials reported specific plans to intensify their enforcement efforts——impelled by greater public awareness and more complaints.

•

And smog-smitten Los Angeles (*see p. 22*) finally has a new county air pollution control officer. The county supervisors had talked about hiring a "big name" specialist for the job, but instead they picked S. Smith Griswold, a long-time county employee who has been handling the pollution control district's administrative work.

Under his direction will be the research department headed by Gordon Larson (former director of the district) and the enforcement staff led by ex-police captain Louis Fuller.

•

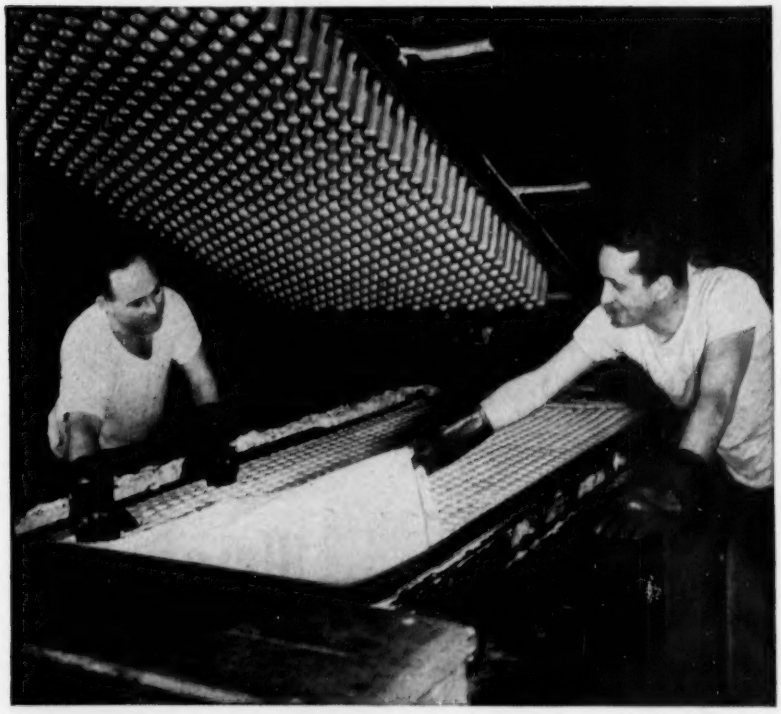
Plastics progress note: Wines shipped by the Compagnie des Grand Crus (Anjou, France) use polyethylene stoppers instead of the time-honored corks.

FOR EVERY FILM-FORMING JOB

THE KEY IS CMC

AT WORK—The Goodyear Tire & Rubber Company has found CMC to be an excellent mold release agent in Airfoam production. The dry CMC film provides a mold surface that resists shrinkage of the foam and, when wet, permits easy stripping without tearing.

OR PLAY—This young man's bubbles are also dependent on Hercules CMC. This product of Mecklenburg Specialties, Inc. provides a simple but convincing demonstration of the exceptional film-forming properties of CMC, and suggests its wide range of application.



From one extreme to the other, purified Hercules® CMC is proving its value as a general-purpose, water-soluble film-former.

Compatible with a wide variety of gums, plasticizers, and resins, CMC is insoluble in organic solvents. Water solutions of CMC can be evaporated to form clear, tough, flexible films.

CMC has exceptionally high purity (99.5+%), and is uniformly high in quality from lot to lot. Determine for yourself how CMC can help meet your film-forming needs. Write for testing samples, indicating the proposed use, so the proper type can be sent.

Virginia Cellulose Department

HERCULES POWDER COMPANY

INCORPORATED

992 Market Street, Wilmington 99, Delaware

VC56-1

"Another Product Safely Shipped in Inland 'protection-eered'* Containers"

The Wright Chemical Corporation, Chicago, Illinois, specialists in water conditioning, produce a myriad of special chemicals for the effective control of corrosion, scale, slime and algae in a great many different types of industrial water systems, from breweries to oil refineries . . . diesel engines to sugar mills.

Such a wide variety of different chemical products presented quite a problem to Wright's packaging engineers. They knew the most practical and economical package was a steel drum, but many of their chemicals were not compatible with steel. Contact resulted in discoloration, contamination of the formula and a subsequent decrease in effectiveness. Drums with special protective linings, capable of holding their entire product line, seemed to be the only answer.

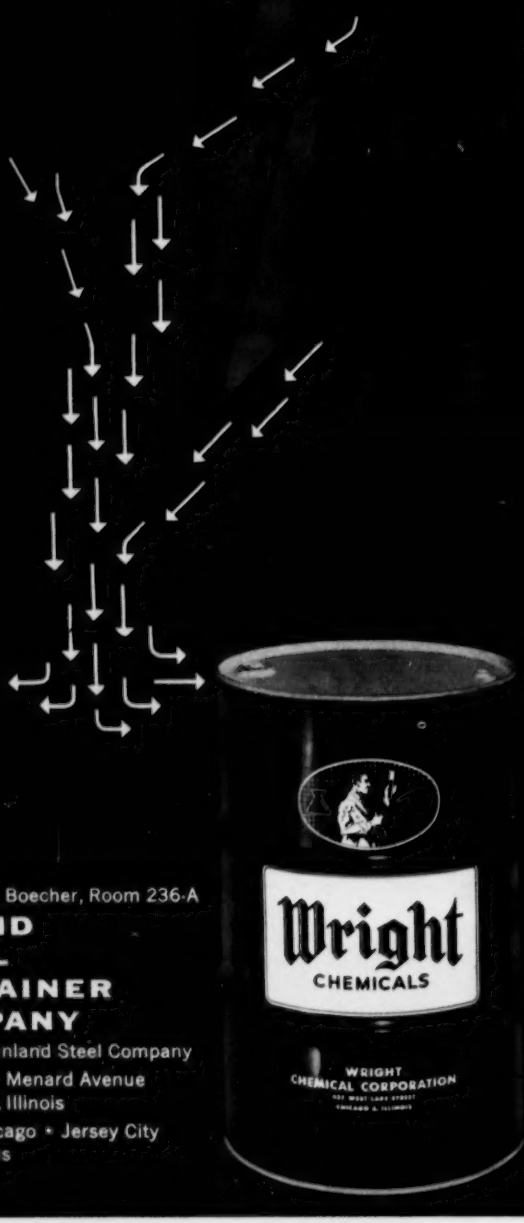
Inland Steel Container's packaging specialists went to work on the problems and came up with the right solution for them. Linings "tailor-made" especially for their requirements. Ever since, high quality Wright Chemical water conditioning products have been successfully shipped in Inland "protection-eered" drums.

The next time you have a packaging problem, call your Inland Steel Container representative. Inland's well-known reputation for solving the tough ones stands behind him.

*the right container, with the right lining for your product.

"It's better to ship in steel"

they keep the
WATER RUNNING!



INLAND

Write Mr. R. Boecher, Room 236-A
INLAND STEEL CONTAINER COMPANY
Division of Inland Steel Company
6532 South Menard Avenue
Chicago 38, Illinois
Plants: Chicago • Jersey City
New Orleans

BUSINESS & INDUSTRY . . .

LARRICK: Backs feeling that some increase is . . .

Better than None at All

For the first time in five years, the Food and Drug Administration may be able to step up its enforcement program. The full House of Representatives last week approved a 13% increase in the agency's funds.

There's little chance the Senate will cut back the $5,484,000 appropriated by the House. And FDA will even have some ammunition to ask for a possible further increase.

A "citizens' committee," appointed by the Health, Education & Welfare Dept. to study the agency's program is now slated to report in late April, at about the time FDA officials will be testifying before a Senate Appropriations subcommittee. The citizens' group is expected to strongly approve present FDA programs, and to support a considerable step-up in funds.

There is presently a disagreement among FDA officials as to whether such a report should be used to ask an even greater increase than the 13% boost now requested.

Those who favor such a move feel that if a further request is held up until next year, much of the force of the report will have been dissipated. On the other side are those who feel that making a further request is simply tempting fate.

FDA Commissioner George Larrick told *CW* that he believes the best way to build up a staff is in gradual increments.

And while the chemical industry is not too directly concerned with the agency's field inspections, many FDA laboratory investigations are of prime importance.

Right now, Larrick reports, his agency has some 400 chemical food additives on the shelves awaiting test.

Copious Curiosity

Pfizer's lawyers, bookkeepers and file clerks will be working days, nights and weekends if the company elects to answer all the questions set out in an interrogatory filed by Upjohn attorneys in one of the tetracycline lawsuits.

Upjohn's curiosity about the history of tetracycline development is deep and wide. Its 11-page interrogatory lists 41 questions, many of which have several sub-questions. Among the many things Upjohn wants to know in prosecuting its suit for a declaratory judgment that it's not infringing Pfizer's tetracycline patent:

- Details on negotiations between Pfizer and American Cyanamid concerning tetracycline and other broad-spectrum antibiotics.
- Licenses granted and royalties received under Duggar patent 2,482,055, Niedercorn patent 2,609,329, Conover patent 2,699,054, and Sobin patent 2,516,080.
- Pfizer's volume of production and dollar sales in the U.S. on Aureomycin, Terramycin, tetracycline and other broad-spectrum antibiotics for the years 1950-54; and corresponding figures for all other Pfizer products.
- Did Pfizer and Cyanamid discuss in advance Cyanamid's purchase of Heyden's antibiotics division?

Lawyers for Upjohn and Pfizer have agreed that Pfizer will have at least until April 14 to file answers.

Under the Wire

It's certain now that 24 of the government-owned butadiene, styrene, and synthetic rubber plants will be sold to private owners. Title to the facilities will be transferred to their new owners between April 21 and April 29. Contracts covering plants in single locations (or with a supply relationship) will be closed on the same day.

Only problem left to be decided: whether the Rubber Disposal Commission will be able to parcel off its still-unsold Baytown, Tex., GR-S copolymer plant. Both Senate and House have approved a bill allowing the commission to solicit bids; but any sale (which must be negotiated within 60 days) must still be approved by the Attorney General, then submitted to Congress.

The bill as passed also allows sale or lease of 448 ICC-104 AW pressure tank cars.

Slow Pace Forecast

The House Interstate Commerce Committee is finally wrestling with one of the most controversial issues of the year: amending the Natural Gas Act to exempt natural gas producers from federal control.

Slow progress is expected. Committee hearings probably will not be completed in less than a month, and strong opposition from industrial and domestic consumers is expected all along the line.

One factor adding to the doubt that much will be accomplished this year: President Eisenhower has not said yet whether he will approve exemption.

The Federal Power Commission majority has already told the committee that it doesn't want jurisdiction over producers, but the U.S. Supreme Court has ruled that it must.

The gas industry, aware of the hurdles it faces, ironed out its own differences last week, agreed to changes in the current act acceptable to both producers and pipeline operators.

WHERE IS THE LINE ON MERGERS NOW?

Court ruled in 1945 that Alcoa's 1938 ownership of 90% of aluminum ingot capacity was illegal.

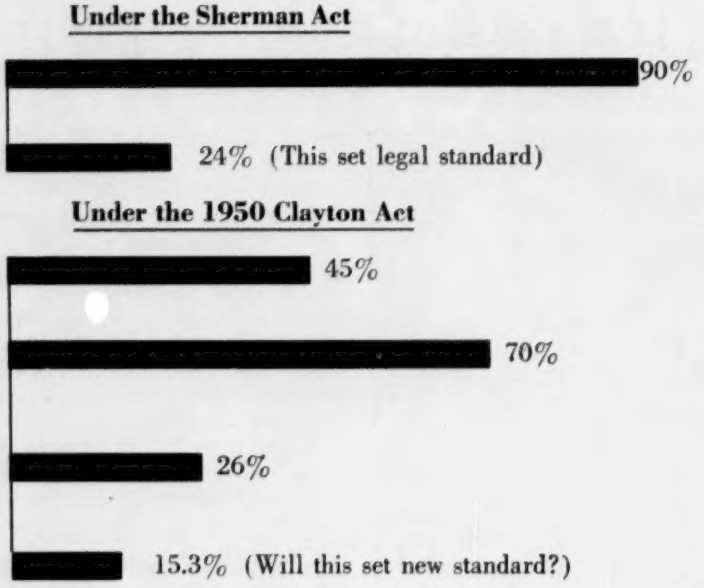
In 1948, Supreme Court okayed merger of U.S. Steel Corp. and Consolidated Steel Corp., which added Consolidated's 11% of Pacific market for fabricated steel to U.S. Steel's 13%.

In 1952, FTC charged Pillsbury's purchase of baking mix competitors selling 23% of the Southeast market was illegal when added to Pillsbury's 22% of the market.

In 1954, FTC said Crown Zellerbach (with 50% of Pacific Coast paper product sales) violated law by buying St. Helen's Pulp & Paper Co. with 20% of areas' sales.

In 1955, Justice Dept. said Schenley (with 22% of total liquor production) violated law in getting control of Park and Tilford (with 4% of production).

This week, proposed merger of Bethlehem Steel and Youngstown Sheet and Tube is still being opposed by Justice Dept. Merger would add Youngstown's 4.4% of ingot capacity to Bethlehem's 14.9%.



Mergers: In for Some Stern Scrutiny

Chemical company executives are well aware of the current urge to merge in their industry. According to government and industry estimate, the chemical industry is one in which merger activity has been particularly strong in recent years.

One big difference between this current wave of mergers and others in the past, however, is that the government now has specific power to challenge in the courts a merger either before it happens or after it has already taken place.

So far, this new authority has already hit one chemical processing firm, Crown Zellerbach Corp. (*see chart*). But the antitrusters have had a hard time laying their hands on many of the mergers in the chemical industry, largely because of its heterogeneous structure.

Spotlight Turned On: This week, however, all signs point to a growing emphasis in Washington on mergers.

For one thing, the Republican Administration right now is readying antimerger cases that will draw new guide lines on "acceptable" size for new industries.

And the Democratic Congress is already warmed up to give mergers plenty of attention. Both House and Senate committees have all the investigation funds they'll need.

Action Already: Indicating what direction these investigations should take, Washington already is giving attention to these merger actions:

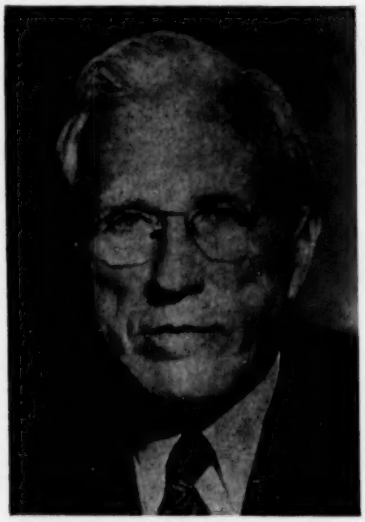
- The proposed merger of Bethlehem Steel Corp. and Youngstown Sheet and Tube Co. is hot again—despite continuing opposition by the Justice Dept. Insiders predict that the two companies are about ready to challenge the government to a court test.
- The Federal Trade Commission investigation into the current merger wave is completed, and a final report now being written will probably be released within 30 days. Among other things, the report will spell out the significance of the heavy merger activity in the chemical industry.
- The report of the Attorney General's national committee to study antitrust laws—scheduled for release late this week—takes a very strong stand on enforcing the 1950 antimerger law. Underlying concern, in government and out, raised by recent mergers is that the tough 1950 amendment to the Clayton Act—which gives the government authority to prevent any merger that "may substantially lessen competition" is still a new law, untested in court.

Using the 50-year-old Sherman Act, the government spent years to establish any kind of guideposts on size. Two important guideposts were set in the Aluminum Co. of America and U.S. Steel Corp. cases (*see chart*). But the law was so weak that merger and monopoly cases were actually few and far between.

The 1950 law closed a loophole, however, gave antitrust officials the most powerful tool they have ever had for dealing with size and concentration in industry.

Now the government is drawing lines between legality and illegality (*see chart*). It is going after mergers that have national significance as well as mergers with only regional impact, as the new law specifically provides.

Where the hatchet will fall next is anybody's guess. But insiders in the Antitrust Dept. insist there's a long line-up of mergers due to be challenged.



JUDGE HARTSHORNE: In 60-page decision, a firm "no" to plea of coercion.

Setback, Not Defeat

So far, it's been a losing battle, but Schering Corp. (Bloomfield, N.J.) will continue its fight to upset the U.S. government's present policy on compulsory licensing of patents that were among the vested assets of the wartime alien property program.

The fight is important not only to Schering stockholders and to companies interested in manufacture and sale of hormones and other drug products covered by the Schering patents —it also may establish precedent on disposal of many other chemical and pharmaceutical patents that came into federal custody during World War II, and on more recent patents issued on applications that were vested under the Trading with the Enemy Act.

Government Stand Upheld: The Schering cause suffered a setback last week when Federal Judge Richard Hartshorne issued a 60-page opinion that supported the position taken by the government in the civil suit that had been filed against the company more than two years ago in U.S. District Court, Newark (*CW, Dec. 13, '52, p. 16*). Judge Hartshorne ruled:

- That the Trading with the Enemy Act is constitutional.
- That the alien property custodian and Attorney General had complied with the law in all respects.
- That the government's patent policy did not have to be published in the *Federal Register*.
- That the government had the right to specify the terms under which Schering stock was sold to private owners early in 1952, and that Schering is now required to comply with those provisions.

Each of those points had been controverted by Schering. The company admits that its officers had signed a paper that called for granting of nonexclusive licenses at reasonable royalty rates under Schering patents issued between 1947 and 1952; but Schering contends that this document was not valid because the officers signed under duress. (Pre-1947 patents were to go on the Patent Office's "Register of Patents Available for Licensing and Sale.")

Duress Plea Rejected: "Schering would not have made such promises," the company's attorneys argued, "if it had not been for the compulsion which prevented the exercise of the will and discretion of said officers and directors."

Hartshorne accepted almost verbatim the government's answer to that argument. As the "one man" in a "one-man corporation," Attorney-General Howard McGrath had the right to require Schering to comply with his directives; thus, the judge reasoned, the government's compulsion as to the agreement was lawful, and Schering can't plead "duress."

Schering President Francis Brown said the company's attorneys are now studying the decision, but that "it seems most probable that we will carry the litigation to the highest courts." Meanwhile, Schering will stick to its own interpretation of the obligations it incurred in the shift from public custodianship to private ownership three years ago.

Recent Patents Not Affected: Brown also pointed out that the disputed directive applied only to patents or patent applications owned by the company prior to 1952. "Therefore," he continued, "if the court's decision should stand up on appeal, it will not, in any event, require the company to license Meticorten, Meticortelone, and other developments resulting from research conducted since 1952."

"There are," Brown concluded, fundamental moral as well as legal principles involved in this case." People interested in General Aniline & Film Corp. might tend to agree.

DEMMLER: Concerned chiefly over investors' . . .

Failure to Take Heed

Uranium stocks emerged this week from the Fulbright Committee's "friendly study" of the stock market as the one sector where, above all else, investors in securities should beware.

Both Democrats and Republicans on the Senate Banking & Currency Committee expressed interest in the phenomenon of speculative uranium shares in vast quantities being issued under only barest minimum of regulation.

Chairman Ralph H. Demmler of the Securities & Exchange Commission, principal market police agency, said uranium shares are giving SEC "lots of concern today."

Most uranium offerings, Demmler said, are small enough—under $300,000—to be exempt from SEC's most stringent regulations, but even the least of them are bound to provide an "offering circular."

Sen. Frederick A. Payne (R., Maine) asked Demmler whether more or revised controls are necessary to deal with these offerings.

"These offering circulars," Demmler said, "are detailed enough to call attention to the extremely speculative nature of the operation. The difficulty is that people will not read what is offered to them."

He said he sees no need for either new legislation or a revision in regulations to deal with the problem.

SEC has been following through on

some uranium offerings that "look unpromising," to be certain that they do more than pay expenses of the promoters—that is, whether they actually "get people into the hills to work the claims."

Direct Questioning: Chairman J. William Fulbright (D., Ark.) put the uranium question to Marriner S. Eccles, longtime chairman of the Federal Reserve Board in Roosevelt-Truman days. Eccles is a Westerner with extensive financial holdings in Utah, a pivotal point in the present uranium boom.

"What do you think of this present boom in uranium stocks?" Fulbright asked.

"Well, let me put it this way," Eccles answered. "It is very premature, of course, to determine what success most of these uranium companies will have in discovering uranium.

"The difficulty is that a great many uranium stocks—I suppose most of them—have been issued on the basis of claims that they have covering a certain area of land in districts where uranium has been discovered. But that does not indicate at all that most of them are going to find uranium . . ."

"You don't have any of those penny uranium shares, do you?"

"No, no . . . I would not object to going into the development of uranium on the basis of a direct development. But I certainly would not want to go into it through the purchase of penny stocks through these promotions."

COMPANIES. . . .

National Gypsum Co. is offering 464,325 additional common shares to stockholders at the rate of one new share for each six shares held. Rights expire April 4. Proceeds of the issue will be used in the company's 1955 expansion program.

•

Pan American Sulphur Co. has registered $4.6 million of subordinated 12-year debentures with the Securities & Exchange Commission. The securities will be offered to stockholders on the basis of $100 of debentures for each 40 shares held. Due April 1, 1967, the issue will be convertible until April 1, 1964.

•

St. Regis Paper Co. and Michigan Molded Plastics, Inc. (Dexter, Mich.) jointly revealed that more than 90% of the outstanding capital stock of the Michigan concern has been deposited in exchange for St. Regis common. Final negotiations should be closed this week, at which time Michigan Molded Plastics becomes a subsidiary of St. Regis.

•

Chemstone Corp. (new subsidiary of Minerals and Chemicals Corp. of America) has acquired the Marblehead, O., plant and Lakeside & Marblehead R.R.—formerly owned by the Kelley Island Co.

•

Site for construction of a multimillion-dollar cement plant has been purchased at Phoenix, Ariz., by Erle P. Halliburton, Oklahoma industrialist who recently purchased the town of Clarkdale, Ariz., where he will mine raw material. Halliburton says he plans to spend $1.5 million developing the Phoenix site during the next two years, further states he plans to pipeline his raw material (crushed and mixed with water) 120 miles from Clarkdale to Phoenix.

EXPANSION

Acetylene: Standard Ore and Alloy Corp. will build a $20-million acetylene, ammonia, and vinyl derivatives plant at Natchez, Miss. To be located adjacent to International Paper Co.'s $40-million plant on the outskirts of the city (on the Mississippi River), capacity will include 30,000 tons of acetylene, and 60,000 tons of ammonia annually.

•

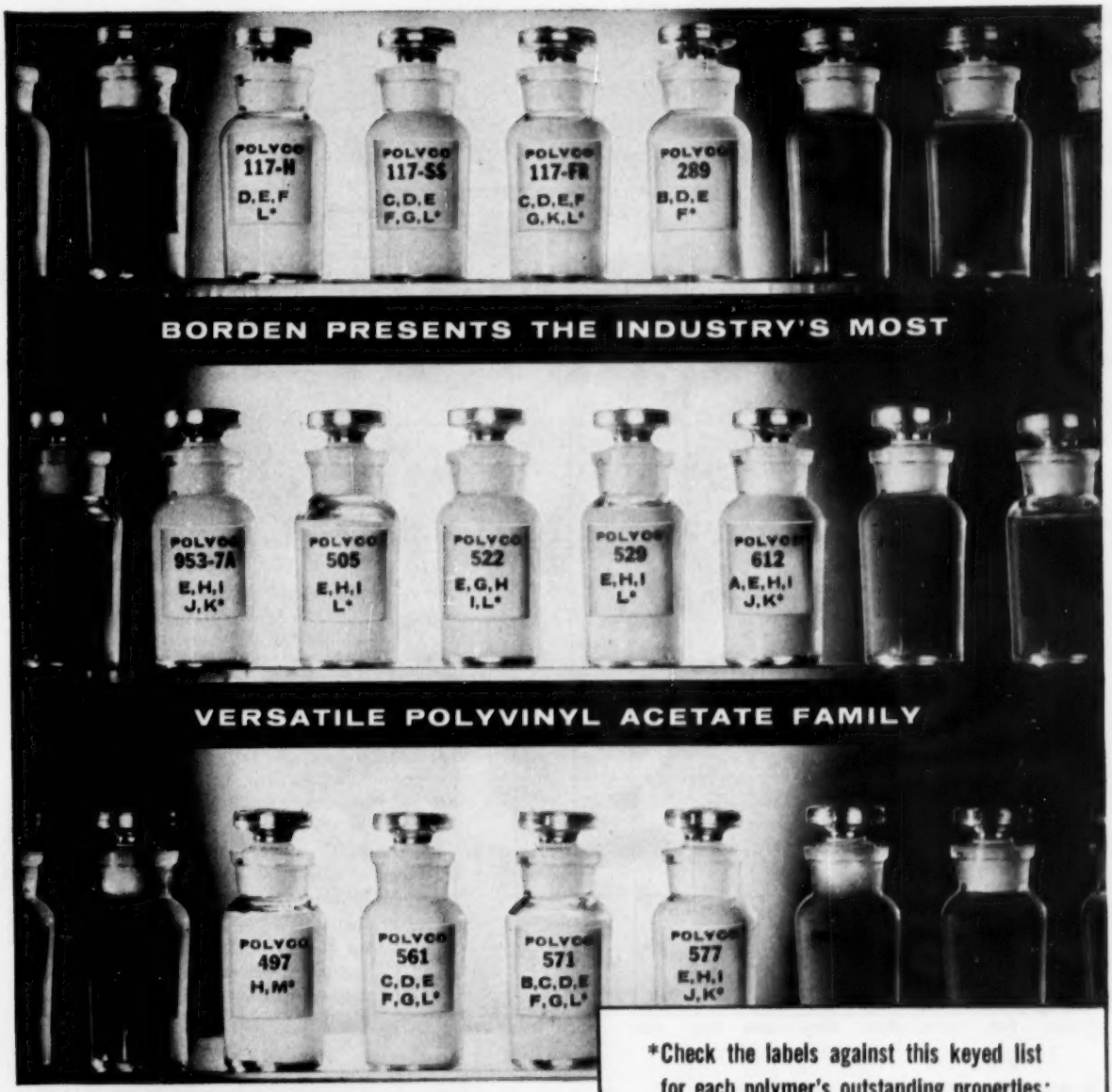
Fertilizer: Grading work at Grange League Federation's fertilizer plant site at Big Flats, N. Y., is now under way. Cost of the proposed plant: $800,000; capacity: 300,000 tons/year of fertilizer. Production is expected to start early in 1956.

•

Polyethylene Products: Poly-chemical Industries, Ltd., (Edmonton, Alberta) plans to build a $225,000 plant southeast of Edmonton to produce polyethylene pipe, tubing, sheeting and packaging film. Initial capacity: 558,000 lbs./year.

Winning Over Workers' Folks

ONE NEAT WAY to enhance that company spirit among employees is to win over the workers' wives and children. At Houston, Tex., Shell Chemical Corp. recently made friends with its employees' families by bringing them out to the plant for guided tours. More than 2,000 people accepted the invitation, paid their visits on "plant days" staged on five Saturdays. Above, one group of visitors admires a scale model of a bisphenol-A plant.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There are others in this family with characteristics which may suit your special requirements. Many are available custom pre-plasticized. *Whatever* your needs . . . it pays to make POLYCO responsible for all your polymer requirements. For Borden's POLYCO experts have a wide range of experience in polymerizing *all* resins . . . and "personalizing" particular polymers for particular applications. For a confidential discussion with a Borden Polyco representative, write The Borden Company, Chemical Division, POLYCO Dept. CW-45, Peabody, Mass.

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- **d.** Quick Grab
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- **f.** Remoistenability
- **g.** Freeze-Thaw Stability
- **h.** Water-Resistance
- **i.** Fine-Particle Size
- **j.** Borax Tolerance
- **k.** Low Temperature Film Forming
- **l.** High Temperature Stability
- **m.** Alkali Solubility

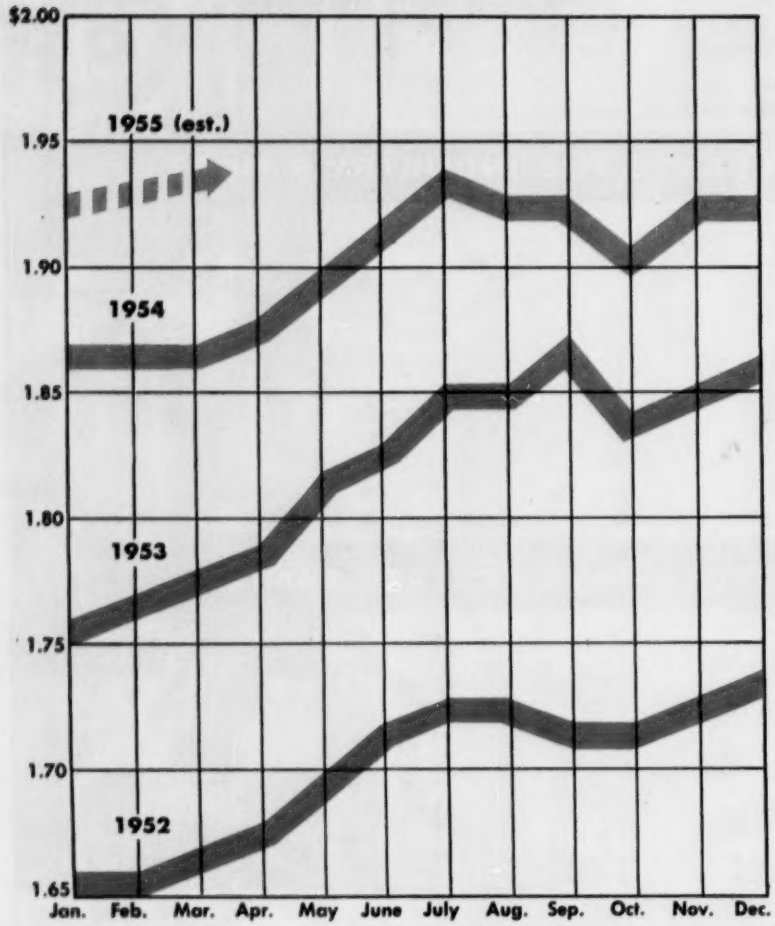
POLYCO DEPARTMENT

THE *Borden* COMPANY

CHEMICAL DIVISION

AVERAGE HOURLY EARNINGS IN U.S. CHEMICAL INDUSTRIES

(Source: Bureau of Labor Statistics)



Next Stop: Stratosphere

Out of the lower atmosphere, into the stratosphere—that's the upward course of chemical workers' earnings, which now show signs of reaching an average level of $2/hour before the year is over.

This would put the chemical process industries in that select company of large manufacturing groups* in which average hourly earnings already are at $2 or more. But the exclusiveness of this club isn't the only result to be contemplated: a $2 hourly pay average in this industry would mean a more-than-$6-million rise in monthly payroll totals.

Latest renewals of chemical labor contracts show that the unions are driving for increases larger than those that made up last year's 5¢ pattern. This alone may raise the average to the $2 figure by December.

Elevating Influence: At least two other elevating influences are likely to be affecting chemical wage rates before next winter. One is federal wage regulation, including both the minimum wage for all establishments engaged in interstate commerce and the prevailing wage rates for companies with large government contracts (*CW, March 5, p. 12*).

Many members of Congress are in a mood to consider boosting the 75¢/hour federal minimum wage rate, what with both parties looking for labor votes next year. The question: how much of a boost? Secretary of Labor James Mitchell thinks a 90¢ minimum would be dandy; AFL and CIO have told President Eisenhower that a $1.25 minimum is needed.

The other factor tending to prod chemical wages upward is that of productivity and mechanization.

Five Moving Fastest: That chemical wage rates have been advancing speedily in the past three years is illustrated by the color chart on this page. During that period, average hourly earnings in this industry rose by 28¢/hour—a figure exceeded only by the 30¢ jump in primary metals and in ordnance and accessories, and equaled only by the transportation equipment and publishing industries.

While chemical earnings bolted from $1.65 to $1.93/hour, the all-manufacturing average rose by 19¢, from $1.64 to $1.83/hour. In three principal manufacturing industries, the gain in hourly earnings over the same period amounted to 10¢ or less. Lowest rise: in textile mill products, from $1.34 to $1.37/hour.

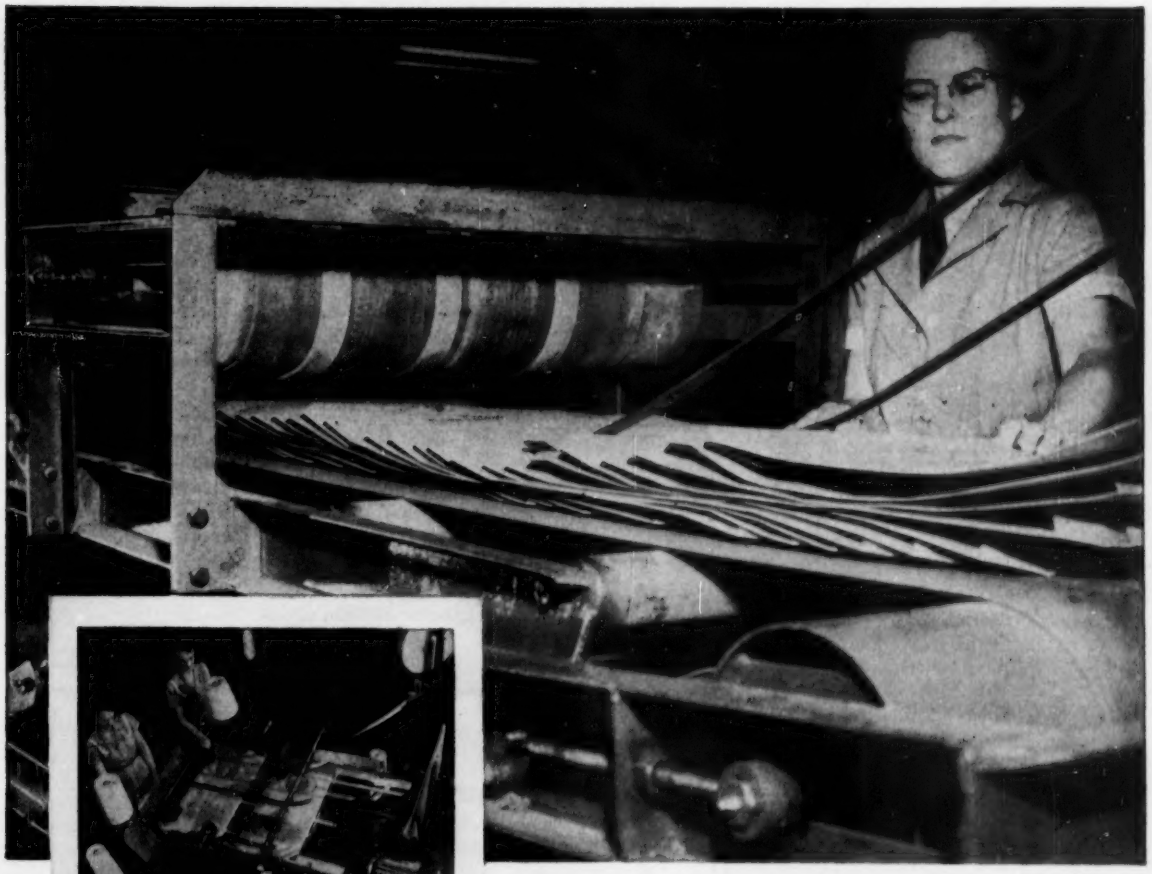
Within the chemical industry, hourly earnings mounted in the various segments irregularly: synthetic rubber, up 33¢ to $2.28/hour; industrial inorganic chemicals, up 30¢ to $2.15; soap and glycerine, up 30¢ to $2.22; plastics, up 24¢ to $2.02; paints and pigments, up 24¢ to $1.92; drugs and medicines, up 24¢ to $1.79; vegetable and animal oils and fats, up 24¢ to $1.48; synthetic fibers, up 19¢ to $1.81; fertilizers, up 19¢ to $1.48; and miscellaneous chemicals, up 11¢ to $1.81.

5¢ Rise Still Common: *CW's* spot-check of 35 recent wage settlements by chemical companies throughout the country shows that the 5¢/hour increase is still being accepted more often than any other figure, but that more than 54% of the new wage hikes are for 6¢ or more. The breakdown: less than 5¢, five new contracts; 5¢, 11 contracts; 6¢, 9 contracts; 7¢, 5 contracts; 8-9¢, 3 contracts; 10¢ or more, 2 contracts.

Plants at which these increases have gone into effect:

4¢ or less—Cliffs Dow Chemical (Marquette, Mich.); Armour (Al-

*Printing, publishing and allied industries, $2.30; products of petroleum and coal, $2.28; transportation equipment, $2.19; primary metals, $2.14; rubber products, $2.05; machinery (except electrical), $2.04; and ordnance and accessories, $2.02.



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liance, O.); Koppers (Montgomery, Ala.); Standard Lime & Stone (Kimballton, Va.); Dow (Ledyard, Conn.).

5¢—West End Chemical (West End, Calif.); Stauffer (Nipomo, Calif.); Ayerst Laboratories (Rouses Point, N.Y.); F. S. Royster (Madison, Wis.); Reilly Tar & Chemical (Newark); Nichols Chemical (Valleyfield, Que.); Trojan Powder (Allentown, Pa.); Dominion Tar & Chemical (Cornwall, Ont.); Atlas Powder (Chattanooga); Pennsylvania Salt (Natrona, Pa.); and Monsanto (Nitro, W. Va.).

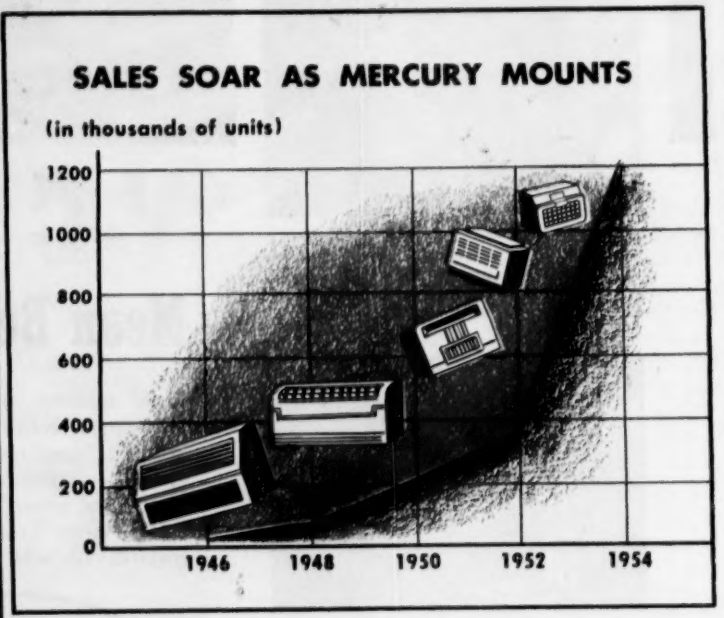
6¢—McKesson & Robbins (Bridgeport, Conn.); National Carbide (Ivanhoe, W. Va.); Diamond Alkali (Pine Bluff, Ark.); Merck (South San Francisco); American Agricultural Chemical (Carteret, N.J.); American Cyanamid (Hamilton, O.); Linde Air (Evansville, Ill.); and American Cyanamid (Linden, N.J.).

7¢—Illinois Powder (Grafton, Ill.); Koppers (Addyston, O.); West Disinfecting (Long Island City, N.Y.); Rayonier (Jesup, Ga.); and Rohm & Haas (Bristol, Pa.).

8¢ or more—Great Lakes Carbon (Morgantown, N.C.); Liquid Carbonic (Philadelphia); Westvaco Mineral Products (Carteret, N.J.); Olin Mathieson, (East Alton, Ill.); and American Cyanamid (Waterbury, Conn.).

There's significance in the fact that chemical wages have been rising faster than those in most other industries. To a great extent, recent wage increases have paralleled productivity increases stemming from use of improved equipment—which the chemical industry is adopting more rapidly than most other industries.

IMPACT



Cool Air: Hot Profits

IF CHEMICAL SUPPLIERS are cool this summer, it won't be over sales to makers of room air conditioners. Reason: they're hoping for even greater dollar profits this year than last. In 1954 such units used: some 1,220 tons of fluorinated hydrocarbon refrigerants; 2,440 tons of high-melting-point tars (for base pan sealing); 793,000 gal. of lubricants; 978,000 gal. of paint primers, finishes, thinners; 152,600 lbs. of caulking compounds; 305 tons of glass-fiber insulation; 3,050 tons of high-impact plastics. Consumed in addition: 171,000 gal. of adhesives.

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fatty alcohols: cut rocket tube wear and tear?

● **Rocket and jet fuels** may show less tendency to corrode tubes when compounded with fatty alcohols, in the opinion of some experimenters. If you have a problem on the frontier of today's chemical research, CACHALOT brand fatty alcohols may offer an answer. Large tonnages promptly available for your pilot runs.

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● **Pour-point depressants** add new versatility to lube oils. CACHALOT cetyl alcohol leads to interesting acrylate esters for improving viscosity. And NF, USP, or technical grades are low in price.

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Bags supplied by **Austin Industries,** Marlboro, Mass.

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Here is a brand new sales tool . . . conceived by the makers of Expello . . . made possible with film made of BAKELITE Brand Polyethylene.

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How did polyethylene make this possible? Sam Knox* explains, "We tested different films for months. Only polyethylene met all our needs completely—*chemical resistance* (against paradichlorobenzene) . . . *strength* and *tear resistance* (no need to reenforce the hanging hole) . . . *flexibility* (no cracking when folded into can) . . . *product visibility* for user convenience, and *good printing qualities* to highlight the Expello name."

"Now, with polyethylene's economy, we can give hangers away free with our 2½, 5 and 10 lb. containers . . . a new sales angle for dealers."

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*Pres., **Judson Dunaway Corporation,** Dover, N. H., makers of Expello, Vanish and other household products.

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WIDE WORLD

For a Change: Smog Wanted

THEY'RE CHAGRINED if it happens during other conventions in their city, but Los Angeles residents hope they'll have a dripping, stinging, humdinger of a smog—but very brief—sometime during the April 18-20 meeting of air pollution experts from all over the U.S. and from some foreign countries. This, Angelenos figure, may be an opportunity to get extra help in diagnosing their smog troubles. The visitors will encamp at suburban Pasadena for the third National Air Pollution Symposium, sponsored by Stanford Research Institute, Cal Tech, University of Southern California, University of California at Los Angeles, Southern California Air Pollution Foundation, and the Air Pollution Control Assn. Speakers include top-flight names in various fields, among them atomic scientist Harold Urey and Chrysler Engineering Vice-President James Zeder. Sessions of chemical industry interest include "Legal Aspects of Air Pollution" and "Effects of Air Pollution on Plants" (*see p. 28*).

Backgrounding the meeting will be the Los Angeles smog-and-politics struggle. Latest development: a special advisory committee headed by Dean Stafford Warren of UCLA's medical school has outlined a smog emergency plan that recommends emergency measures (including industrial shutdown). The pictures show smog setting in over downtown Los Angeles.

WIDE WORLD

with the help of EPON® RESIN...

New paint prevents damage by hydraulic fluid, exhaust deposits, weathering on Douglas planes

Above right

Douglas DC-7, new record-breaking luxury airliner.

Applying Epon resin-based "Cat-A-Lac" to exterior wing section of a Douglas DC-7. Cat-A-Lac is manufactured by Finch Paint and Chemical Co., Torrance, California.

FIRE-RESISTANT hydraulic fluid, widely adopted by the airlines, attacks ordinary paint. Faced with this problem, materials experts of Douglas Aircraft Company began a search for a protective coating that would stand up to synthetic hydraulic fluid, as well as wind and rain, erosion at air speeds of 300-400 mph, and corrosive exhaust deposits.

In several years of investigation, more than 300 formulations were tested. *But only "Cat-A-Lac" formulated from Epon resins,* applied in exhaust path areas, was *100% intact after more than 1000 hours in actual airline service.*

Because of the unusual durability of Epon resin-based coatings, they have been adopted by Douglas and leading airline operators for plane areas exposed to hot exhaust gases, gasoline, hydraulic fluid and cleaning solvents.

Paint users are recognizing these advantages of Epon resin-based formulations — excellent adhesion, resistance to abrasion and impact, ability to withstand extremes of heat, humidity and corrosive atmospheres. Your Shell Chemical representative will explain how Epon resins can improve your own paint and enamel formulations. Write or telephone for the brochures, "Epon Resins for Surface Coatings" and "Epon Resin Esters for Surface Coatings."

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EPON resins are the epoxy polymers made exclusively by Shell Chemical Corporation.

Paper Makers Inch In on Chlorine Business

	Captive Chlorine Plants in Operation
1956	16
1952	15
1947	14
1936	13
1917	11
1916	10
1908	4
1905	3
1898	1

Many In, More Coming

Despite glowing forecasts of doubled output for U.S. pulp and paper producers by 1965, chlorine manufacturers aren't bubbling with enthusiasm this week. Reason: chemical suppliers are more than disturbed by the steadily increasing number of chlorine plants the paper industry is now building for captive use. To chemical industrialists, each new "captive" represents lost dollar sales to basic chlorine makers.

Next year, for example, when Weyerhaeuser Timber Co. (Longview, Wash.) comes onstream with 100 tons/day chlorine capacity, regular chlorine suppliers in the area (e.g., Hooker, Pennsalt) will be forced to rechannel their chlorine business elsewhere. Weyerhaeuser's plant alone will have the largest single chlorine producing capacity of any paper mill in the U.S., will represent potential production equivalent to about 9% of the chlorine requirements of the entire pulp and paper industry (some 1,110 tons/day in 1954).

Others Active, Too: Recently, West Virginia Pulp & Paper Co. unveiled its $100-million, five-year expansion plan, designed to boost its present papermaking capacity by 25%. Ordinarily, chlorine suppliers might anticipate extra dollar sales from such a significant expansion in the chemical process industry. But, it won't materialize in this case. Why? West Virginia Pulp & Paper can now produce an estimated 50.5 tons/day of chlorine (in a total of four plants), can easily handle increased paper production requirements. If anything, the hike will simply mean more competition for chemical suppliers from the mills' excess caustic soda production. Previewing what its expansion soon may mean: West Virginia's Mechanicville, N.Y., plant is already marketing caustic through its industrial chemical sales channels.

Nor is West Virginia Pulp & Paper, the largest captive chlorine producer in the paper industry. Right now Champion Paper & Fiber's estimated capacity (92 tons/day) and Brown Co.'s rated output (about 58 tons/day) line up one-two in the paper producers' chlorine parade. Total estimated capacity of eight smaller captive chlorine units in paper industry: 74.8 tons/day.

Total Effect: How much have these units trimmed the chemical chlorine business? Combined, 15 paper mills today operating in the U.S. can already supply about 25% of their own chlorine requirements. By 1956, when Weyerhaeuser's capacity is added, this will come closer to 34%. Will it go higher? That's the question no one can answer positively. Odds are it will be yes.

Up to now the only factor restraining the pulp and paper industry from adding more chlorine capacity seems to have been its unwillingness to become further entrenched in fields other than papermaking, particularly one as competitive as chemicals. That's not the case any longer, however. Increased production, competition, and even stream pollution control exigencies are forcing papermakers into the chemical business. And chlorine makers—at least—are disturbed about the prospect.

Western Expansion

Westvaco Mineral Products Division, Food Machinery and Chemical Corp. has leased extensive barite deposits near Battle Mountain, Nev., from the Glidden Co. (Cleveland).

Having already completed economic evaluation and exploratory development work in the area, Westvaco will start operating its new holding immediately under the Mineral Development Dept., with headquarters in Pocatello, Idaho. Processing of barite chemicals will take place at the company's facilities at Modesto, Calif.

Last year, Westvaco acquired one of America's largest unworked phosphate rock and shale deposits in Rich County, Utah, to obtain rock for its elemental phosphorus furnace at Pocatello. Another Food Machinery division (the Chlor-Alkali Division) works holdings of trona, near Green River, Wyo., in the production of soda ash.

Design Team Working

Diamond Alkali Co.'s four-man "design-aid" team is now in Holland working with Dutch engineers to complete equipment and process design for a 51-million-guilder soda ash plant, scheduled for completion by mid-1957.

The proposed plant, first soda ash plant in Holland, is part of a postwar industrialization program being pushed by the Netherlands government. Capacity: 480 tons of soda ash daily; location, Delfzijl. Financing will be handled jointly by private, semiprivate and state funds.

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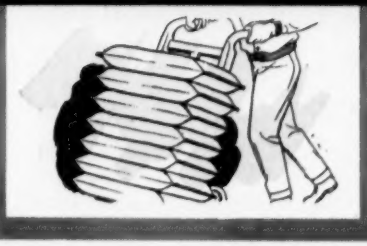

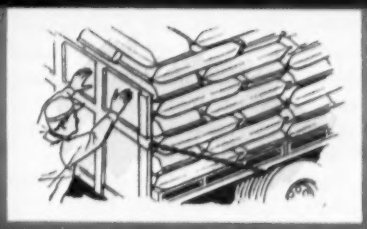

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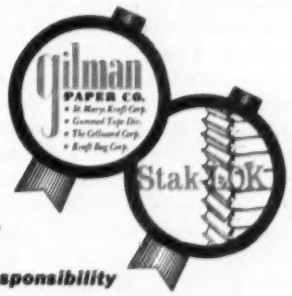

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Three to Get Ready

The Indian chemical industry was prominently in the news this week—with three major expansion moves planned and one export ban due to be lifted soon. Over-all result (provided all schemes are carried out): India's fast-growing chemical industry will take another giant step forward.

Here's a rundown of the most recent developments:

• The Plastics Manufacturers Assn. in Bombay (in cooperation with a group of North Indian industrialists) has thrashed out preliminary details of a plan to start construction of a polystyrene plant sometime late this year. Dow Chemical Co. (Midland, Mich.) (*CW, March 26, p. 42*) will supply technical aid; pursuance of the project has just obtained government sanction. Cost: $1.25 million.

• Permission has also been granted for construction of a soda ash plant in Rajkot, Bombay state. The proposed $10-million plant will have an annual capacity of 200 tons/day of soda ash—100 tons of which will be utilized in the production of caustic soda.

• Third project in the planning stages: a heavy fertilizer plant in the Bhakra-Hangal area, in East Punjab.

This operation was forecast two months ago by H. J. Bhabha, Secretary of the Indian Atomic Energy Commission; U.S. aid will include substantial monetary grants to assist Indian research on an electrical atomic reactor plant near Bombay, and 10 tons of heavy water needed for the proposed fertilizer plant.

Bhabha, who recently attended the United Nations Atoms for Peace Conference in New York, is also president-elect of the World Conference that meets in Geneva in August to further President Eisenhower's plan to harness atomic energy for peacetime purposes.

Meanwhile, in Calcutta, consequent to a flood of complaints to the Indian government concerning its ban on export of *rauwolfia serpentina*, the Chief Controller of Exports has ordered a return of all stocks held by traders throughout the country. Complete figures are due in New Delhi by March 31; government spokesmen predict a tabulation will result in "at least a partial lifting" of the restriction ban by mid-April. Chief reason: the shortage of roots may not be as serious as originally suspected; and in face of the Indian ban, the world market is finding other sources of supply.

Future Uncertain

The status of the Tin Processing Corp. (Houston) (operator of the government-owned tin smelter) appeared even more uncertain this week after Washington officials recommended to the House Banking Committee that the plant be closed "to save the government $50 million per year."

The recommendation was made by Laurence Robbins, head of the Federal Facilities Corp., under which the Tin Processing Corp. was placed following liquidation of the Reconstruction Finance Corp. last year.

Meanwhile Texas congressmen (spearheaded by Rep. Clark W. Thompson, Sen. Lyndon Johnson and Sen. Price Daniel) are continuing their efforts to keep the tin smelter going until it can be sold to private owners. Approximately 600 persons are currently employed at the smelter.

Contrary Opinion: Alex ter Braake, smelter president, admits he has received no official word on the plant's status after June 30. However, he does take issue with Robbins' statement that the smelter is losing $50 million/year.

"Although Robbins may consider the operation a dead loss, the plant still is producing tin, which, if marketed, would tell a different story," ter Braake claims. At present, all the tin produced in the Houston plant goes into the government stock pile.

Consumer tin, ter Braake charges, is obtained instead from the Malayan states, Singapore, and European sources.

Second Step Planned

National Gypsum Co. (Buffalo, N.Y.) will build a $6-million plant in Westwego, La. A 30-acre site has been acquired outside New Orleans; cost is being withheld pending finalization of the deal.

National Gypsum, at present, operates an asbestos cement plant in New Orleans and a paint plant in Good Hope. Gypsum rock for the proposed new units will be shipped in from Halifax, Nova Scotia.

Three 15,000-ton gypsum cargo vessels for this purpose are currently being built for National Gypsum in Germany.

Construction of the plant will start within the next 90 days, will constitute the company's second step in a five-year $75-million expansion program. (Work started on a $2-million fiber insulation board plant at Mobile, Ala., last month.)

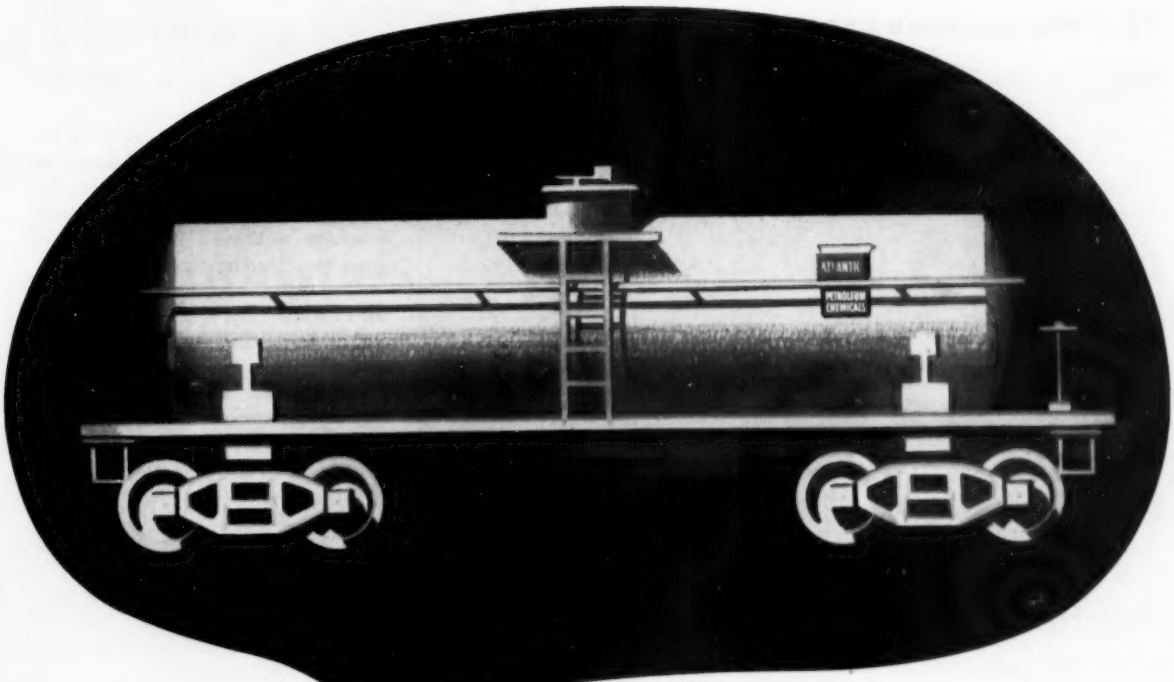
When in operation, National Gypsum's new New Orleans units will employ between 250-300 persons, with an annual payroll of over $1 million.

Spindletop Made Safe

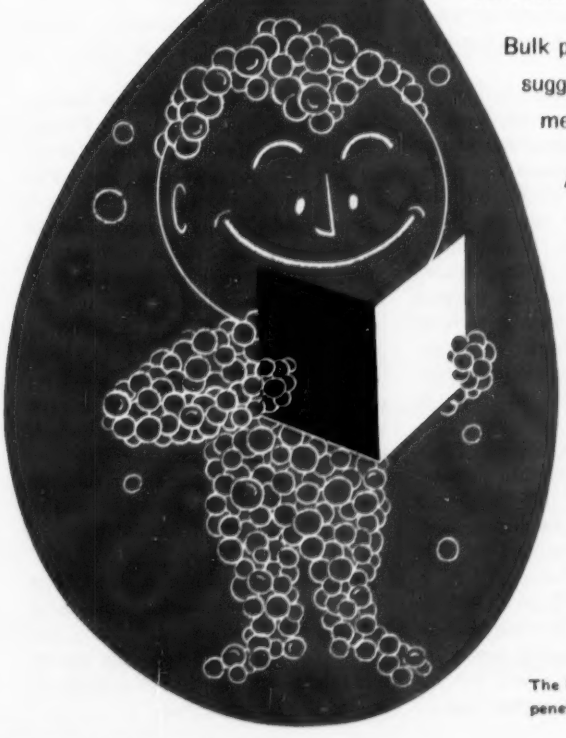
THE LUCAS GUSHER monument, historic landmark in Beaumont, Tex., built to commemorate the blowing in of a gusher in 1901, was moved last week to a new site a mile away. Reason: the 62-ft. monument (consisting of 10 granite blocks) was endangering Texas Gulf's sulfur operations in the Spindletop oil field, stood liable to cause a cave-in.

A bronze plaque will be erected nearby telling why the monument was moved; for the time being, at least, the concrete foundations on which the monument rested will remain in place.

Texas Gulf started mining at Spindletop in May, 1952.



HOW TO CUT COSTS ON DETERGENTS



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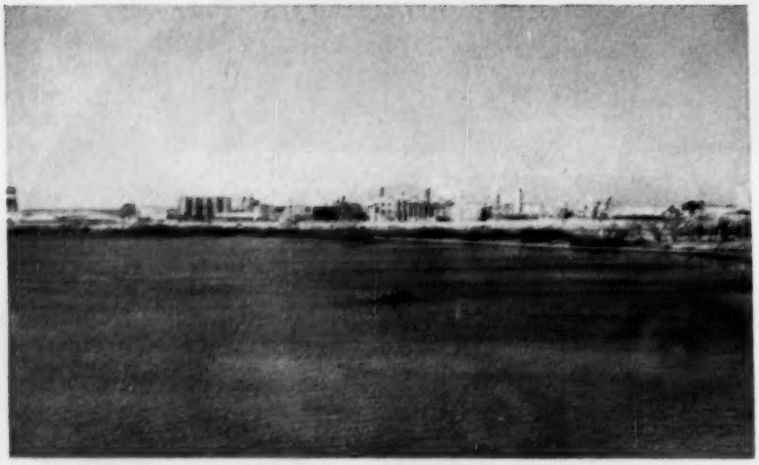

U. S. PHOSPHORIC PLANT: Helping growers is its business, but locally there's . . .

Friction with Florida Farmers

At Sun City, just south of Tampa, Fla., Tennessee Corp.'s U.S. Phosphoric Products Division is producing superphosphate, triplesuperphosphate and insecticides—all for the good of American agriculture. But nearby flower and tomato growers say the plant is hurting their crops.

What has popped up in the federal district court at Tampa is another round in a fight that has been rattling along for at least eight years between two of the most important segments of Florida's economy: the farmers who are taking advantage of the state's subtropical climate, and the chemical and fertilizer companies that have been working the state's valuable phosphate beds.

In the current phase of this dispute, 22 agricultural firms and individual farmers have filed civil suits against U.S. Phosphoric, asking for judgments for a total of nearly $1.5 million as compensation for alleged damage to crops, principally gladioli and tomatoes. The growers say that the damage was caused by stack gases emitted from the U.S. Phosphoric plant.

Abatement Efforts Cited: There's been no hearing on any of these new cases so far, but U.S. Phosphoric has filed a motion to dismiss the suits. The company's defense includes these principal points:

- The growers "invited the alleged damage, if any, by purposely leasing and occupying said lands, knowing of the company's continuous manufacturing operations, and is thereby barred from maintaining this action." (The plant has been in operation about 15 years.)
- "The mere emitting of gases from a manufacturing plant, even though it might produce damage, fails to render the defendant liable therefor in the absence of an allegation that the emission was negligently done, and no such allegation is contained in said complaint."
- The company was not notified of the alleged damage and was not asked to stop or change any manufacturing operation.
- "The most modern equipment" for abating air pollution has been installed at the U.S. Phosphoric plant.

Double Damage Claims: The plaintiffs have filed separate suits, but they all are represented by the same lawyers—John Bowsher, of Columbus, O., and Fowler, White, Gillen, Yancey & Hunkey, of Tampa. The growers also are united in demanding payment for two kinds of alleged damages: damages to crops over the past three years, and depreciation in value of their farm lands.

Largest claimant is Roman Claprood, operating as a Florida corporation, who's asking $405,175 for alleged damage to gladioli bulbs during three winter growing seasons and $17,200 for loss of property value.

Other claims range from $3,900 up to $171,730. Some of the cropland alleged to have been affected lies as far as 30 miles from the plant, but it's contended that under certain conditions, the fumes can be carried that far by the wind.

Earlier Claims Settled: Friction between Florida farmers and phosphate producers can be traced back into the early postwar years, when this same company was sued by a group of growers—including some of the present plaintiffs. Those cases were settled out of court.

Among other suits of this nature, one of the most important that came to trial was that won by H. E. Turner against Coronet Phosphate Co. Turner, a citrus fruit grower, charged that "the emission of large quantities of dust, fumes, gases and smoke from the vents and stacks of defendant's phosphate plant constitutes a threat of damage to crops and lands of the plaintiff." The court not only awarded $5,736.50 damages; it also enjoined the company from continuing to commit the alleged nuisance.

Poultry Damage Asserted: In an earlier action, Gladys Mickler and others sued Victor Chemical Works, contending that gases and fumes from Victor's phosphate plant at Tarpon Springs caused the death of young fowls, and other damage. The company admitted that some smoke, dust and vapor came from the plant, "but not enough to be injurious." This case was dismissed four years after it was filed "for want of prosecution"—which might indicate that it was settled out of court.

In 1947 and again this year, the industrial hygiene division of the Florida State Board of Health has investigated air pollution at phosphate plants. The first check showed that the pollutant about which Tampa property owners had worried came from putrefaction of waters in Tampa Bay and not from the phosphate plants. The current probe is concerned with emission of sulfur dioxide from phosphate plants in Polk County; the agency hasn't received any specific complaint against the U.S. Phosphoric plant, which is in Hillsborough County.

One theory is that any crop damage from phosphate plants may be due to a fluorine compound formed in treating phosphate rock.

Whatever it is, this poses one of the more important pollution abatement problems into which the industry has been putting much research money and talent—but on which the public is inclined to be impatient.

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WIDE WORLD

NAM'S MOSHER, CIO'S REUTHER: In right-to-work strife, war funds pile up.

LABOR

Mobilizing Money: Both sides are out for funds in the current phase of the battle over "right-to-work" laws in the various states. Among leading antagonists are Ira Mosher, chairman of the United Business Committee (which favors enactment and enforcement of such laws) and Walter Reuther, president of CIO (which is trying to get Congress to kill those laws by repealing a section of the Taft-Hartley Act). The CIO says UBC—affiliated with the National Assn. of Manufacturers, of which Mosher is a past president—is asking employers to contribute on a basis that would net a $32-million war chest. Similarly, labor unions are stocking up their treasuries for action on this front; one union leader recently told of "a determined effort to conduct the largest fund-raising campaign in our history and the greatest labor political education drive this nation has ever witnessed."

•

Strikers Budging: In one of the two principal strikes now under way at chemical process plants, things appear to be at a total standstill; but in the other, the strikers are reported to be budging slightly under pressure from members' families and the public.

• In the triple tie-up of Colgate-Palmolive plants in New Jersey, Indiana and Kansas, there's been no change since the strike started (*CW, March 19, p. 13*). The company has published in the three communities' home-town newspapers a letter from Colgate board Chairman Edward Little, explaining why the company regards its 6¢ wage offer as "fair and reasonable." The strikers charge that the company refused to bargain on wages, that Colgate is trying to break up the three-union coalition.

• At Wyandotte, Mich., it appears that nudges from city officials and local businessmen—as well as from hard-pressed families of workers—have induced Local 12270, District 50, United Mine Workers, to reopen negotiations with Wyandotte Chemical Co. Neither side would disclose the results of last week's meetings, but a company spokesman told CW: "Although there is nothing of importance to report as yet, some progress is being made."

•

Labor Law Decisions: In two states last fortnight, the highest state courts held that unemployment benefits are not to be paid to workers who are idled by a strike that they're not involved in. Ohio's supreme court ruled that Ohio law forbids payment of unemployment compensation when the idleness is the result of a labor dispute, regardless of whether the applicant was a striker. Kentucky's court of appeals denied unemployment compensation to International Harvester Co. foundry employees who were out of work in the fall of 1952 because of a strike by IHC machine shop workers. The court said the foundry workers would have been eligible for benefits if they had been working in a "separate establishment."

Big Plans Afoot

Chief target of Farbwerke Hoechst's 1955 expansion program will be greater capacity for raw materials needed in plastics and fiber production.

Outlining his plans at the corporation's annual meeting last month, Karl Winnacker, board chairman, made special note of an oil cracking plant Hoechst plans to build in connection with its polyethylene-producing facilities.

Investments scheduled for 1955 total DM 175 million ($42 million) compared with DM 135 million invested in 1954.

A number of plants (including a polyethylene plant) will be built this year in the Ruhr area; substantial sums are being set aside for participation in foreign development projects; plans are being drawn up to expand Hoechst's sales organization abroad.

Noting that sales in January and February of 1955 were running ahead of 1954's record rates, Winnacker pointed out the increased turnover will necessitate additional financing. Result: Hoechst will issue DM 99.3 million of new stock.

This may be only the first step in a general company move to increase its working capital, however. Why? Directors feel that despite large investments already undertaken and under consideration, Hoechst will need additional outlays in the years to come to "catch up with foreign competitors."

WIDE WORLD

WINNACKER: Wins stockholder approval of new financing.

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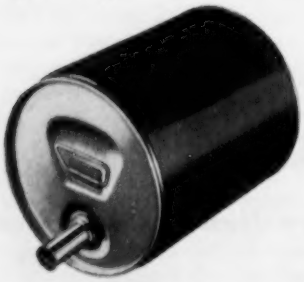
Available in 2½ to 7-gallon capacities . . . in solid colors or lithographed design.



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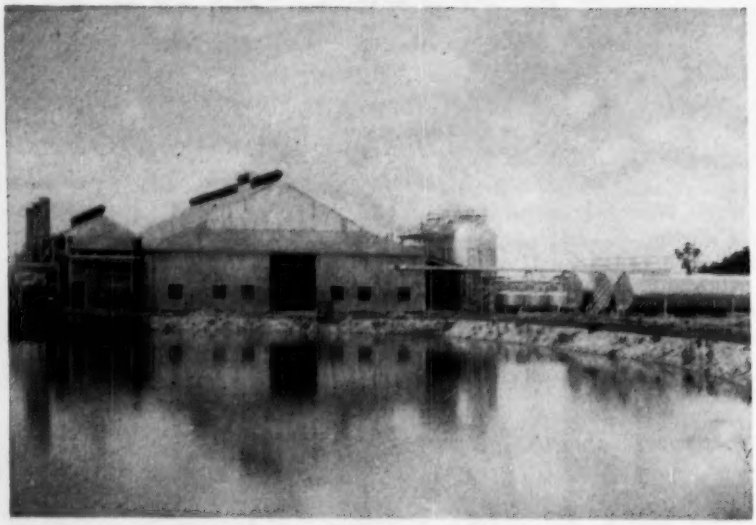

TEHUANTEPEC OPERATIONS: Slated to turn out more than 500,000 tons of sulfur this year.

FOREIGN . . . . .

Sulfur/Mexico: Mexican Gulf Sulphur Co.—a U.S.-financed company—has shipped its first 3,500 tons of sulfur from newly constructed sulfur-producing units on Mexico's Isthmus of Tehuantepec. Bound for delivery to the National Sulphuric Acid Assn., London, England, the sulfur shipment is the vanguard of some 500,000 tons to be produced this year by Mexican Gulf and two other companies.

Prior to recent development of sulfur deposits in the Isthmus region, Mexico imported a substantial part of its sulfur requirements; lack of domestic sulfur has been a major retardant of the Mexican heavy chemical industry.

●

Sodium Phosphates/Great Britain: Monsanto Chemicals, Ltd. has set up a new subsidiary company in Great Britain to manufacture sodium phosphates and other phosphorus compounds. The new firm, Monsanto Phosphates, Ltd., will start construction of a plant at Newport, Monmouthshire, "sometime in the very near future." First production item: sodium polyphosphate for use in the detergent industry.

●

ACS Congress/Venezuela: The Sixth Latin American Chemical Congress will be held in Caracas, Venezuela, May 12-19. Chemical engineers from all Latin American countries are expected to attend the meeting. First such congress was held in Buenos Aires in 1924; subsequent meetings have been held at Montevideo, Rio de Janeiro, and Lima.

●

Silicones/Great Britain: Imperial Chemical Industries Ltd.'s plant at Ardeer, in Ayrshire, Scotland, will start production of silicones by May 1. Designed to produce a whole range of silicones (currently being imported from General Electric Co., of America) the plant will make Great Britain virtually free of imports of silicone fluids, silicone resins and silicone rubbers.

●

Potash/Iraq: The Iraqi Ministry of Economy has submitted to the government a note advocating the government financing of Jordan's Dead Sea potash extraction project. Initial capital investment needed: £4 million sterling; a 4% annual profit has been guaranteed all investors.

●

Joint Denunciation: Japanese and British trade promotion associations joined last week in a denunciation of the embargo on exports to Communist countries. Chief point of contention: that such restrictions are causing economic harm to both countries.

The Association for Promotion of International Trade (Japanese) and the British Council for the Promotion of International Trade made public their view in summing up the conversations recently held between Shozo Murata (head of the Japanese organ) and Roland Berger, director of the British Council.

ATLAS chem-memos

CHEMICALS DEPARTMENT
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Mathematical Emulsifier Selection System Drastically Cuts Laboratory Time and Work

The HLB System reduces the costly, time-consuming laboratory job of selecting the most effective emulsifier for any given formula. This system enables chemists to quickly "center down" the choice from hundreds of emulsifiers to a select few. Result: Substantial reduction of time and cost in evaluation and selection of emulsifiers.

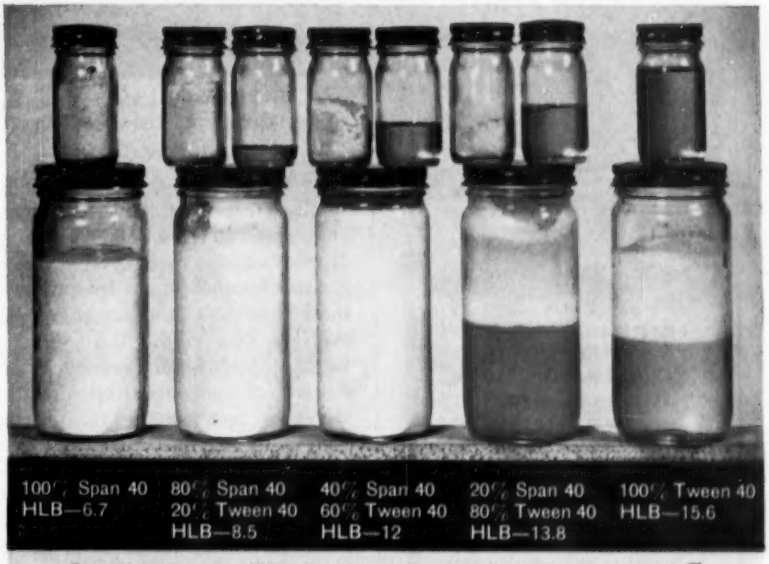
HLB SYSTEM The HLB (Hydrophile-Lipophile Balance) System assigns numerical values to emulsifiers. These values indicate the affinity of each emulsifier for oil or water. Similarly, the System assigns numerical values to various types of emulsions. Emulsifier selection thus becomes a systematic procedure of matching values.

The chemist can find required HLB values for many common emulsions in Atlas literature. Or he can determine them experimentally by preparing test emulsions with a series of emulsifiers of known HLB value.

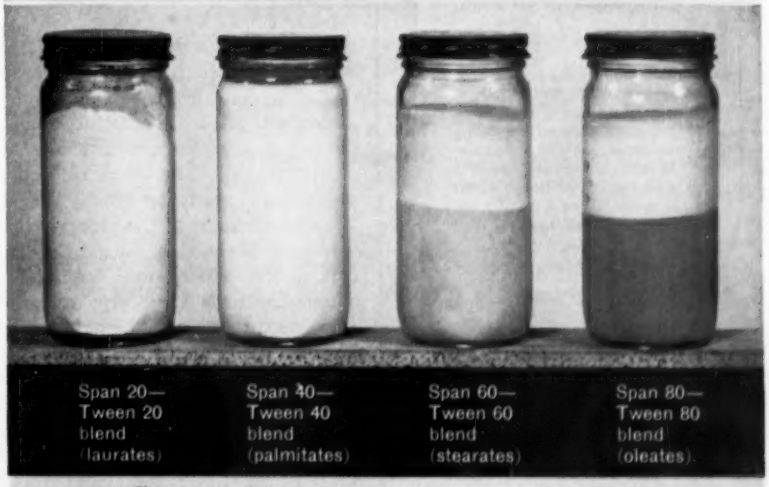
EXAMPLE The upper photo shows a simple test for determining the required HLB of an emulsion (in this case a liquid emulsion of 35% paraffin in water). Choose any two emulsifiers of similar chemical type, one of low HLB and one of high HLB. Combine in various percentages to produce the best possible emulsion. Calculate the HLB value of the emulsifier blend used for the best emulsion (in this case 12). Emulsifiers or blends at other HLB values can be immediately eliminated from further trial.

Now, other chemical types of emulsifiers can be tried at an HLB of 12, as shown in the lower picture, where various types of fatty acid esters are being evaluated. Other chemical types can be tried in the same way, always at an HLB value of 12.

SEND FOR BOOKLET For help on your own emulsion problems, we'll be glad to send you a booklet covering formulations in your industry, and giving a detailed explanation of the HLB System.



Determining optimum HLB value of emulsifiers to make liquid emulsion of 35% paraffin. Only two emulsifiers are needed for such a test. Note that emulsions at left are solid. Satisfactory liquid dispersion is obtained at center, with HLB of 12. Other HLB values of emulsifier are eliminated from further consideration.



Choosing the right chemical type. All these emulsifier combinations have an HLB of 12, but only the second from the left, made with palmitate esters, gives the desired stable liquid dispersion.

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WIDE WORLD

MR. JUSTICE HARLAN: On Supreme Court, a man who knows the industry.

LEGAL. . . . . .

Confirmed at Last: John M. Harlan, who represented Du Pont in two of its biggest antitrust suits, finally has been cleared by the Senate for advancement from the U.S. Court of Appeals in New York to the U.S. Supreme Court in Washington. President Eisenhower had nominated Harlan for the high court post some five months ago, following the death of the late Associate Justice Robert Jackson, but Senate confirmation was delayed until last fortnight. Harlan—whose grandfather served on the Supreme Court, 1877-1911—becomes the 93rd Supreme Court justice, and probably the first with intimate knowledge of the chemical industry.

•

Deed Blocks Expansion: A restrictive clause in a property title deed is keeping Hercules Powder Co. from going ahead with plans for construction of a $9-million chemical cellulose plant at Hopewell, Va. The deed restriction dates back nearly to World War I, after which some of the property that had been occupied by the old Du Pont gun factory at Hopewell was sold to Hummel-Ross Fibre Corp. under a stipulation that the land would not be used for manufacture of "chemical or mechanical wood pulp." Some of the land later was sold to Hercules and another parcel went to Continental Can Co., which makes kraft paper and kraft board. Now Continental would like to have the restriction eased so that Hercules could put up a conveniently close cellulose and wood pulp plant (making pulp from gum and other soft hardwoods but not from pine), but the Virginia State Supreme Court has upheld a Hopewell circuit court ruling that the deed restriction is still binding.

•

Judge Visits Plants: After a five-day hearing that included visits to the plants and laboratories of the two companies involved, Federal Judge Waldo Rogers expects to receive final briefs this month and then hand down a decision about June 1 in the patent infringement suit between Potash Co. of America and Duval Sulfur & Potash Co. To be decided: whether Duval infringed; and if so, what royalty is due.

KEY CHANGES. . .

Howard S. Tierney, Jr., to president, Denver Chemical Manufacturing Co., (New York City).

Edward A. O'Neal, Jr., to director, The Chemstrand Corp. (New York City).

T. E. Hicks, to vice-president, marketing, Pepsodent Division, Lever Brothers Co. (New York City).

Robert E. McCormick, to general counsel, Olin Mathieson Chemical Corp. (Baltimore).

W. P. Bitler, to vice-president and general manager, and **H. K. Vanderhoef,** to vice-president, new product and market development, Kay-Fries Chemicals, Inc. (New York City).

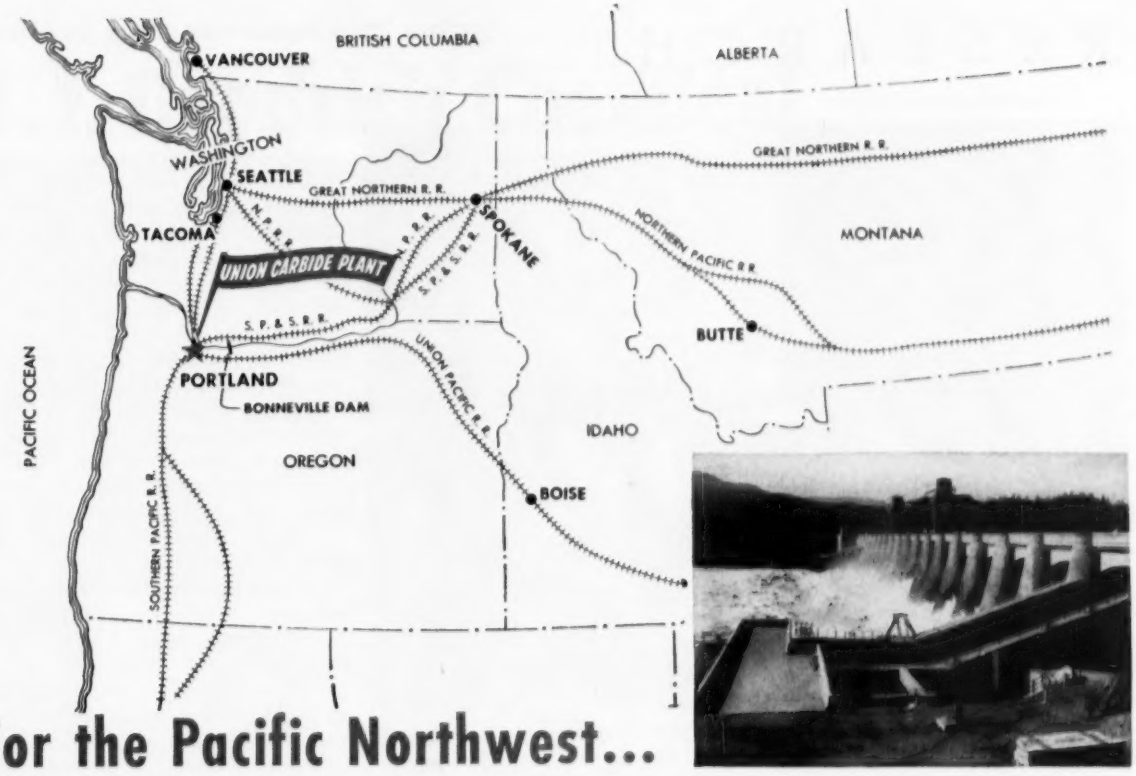
Wilfred N. Hall, to executive vice-president, Dominion Tar & Chemical Co., Ltd. (Montreal).

Louis F. Weyland, to director, sales, Minnesota Mining & Manufacturing Co. (St. Paul, Minn.).

Harry E. Johnson, to president, **Richard H. Maddux,** to vice-president, and **R. W. Jones,** to secretary and treasurer, Triangle Chemical Co. (Macon, Ga.).

John E. Powell, to board chairman, and **William F. Farley,** to president, Smith Agricultural Chemical Co. (Columbus, O.).

M. N. Gaboury, to manager, manufacturing, Organic Chemicals Division, American Cyanamid Co. (New York City).



For the Pacific Northwest... Volume Acetylene at Portland

Acetylene—an important raw material for chemical synthesis—can be supplied in large volumes at Portland, Oregon. If you are planning a new chemical plant in the Northwest, and will use acetylene as a raw material, consider the advantages of having acetylene delivered directly by pipe line. No generation equipment is needed at your plant.

Portland offers these advantages:

1. **Desirable Plant Sites.** Within piping distance of LINDE volume acetylene are many choice locations for your new plant in the Portland area.

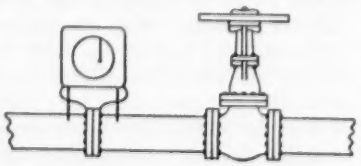
2. **Years of Experience.** Acetylene has been produced from UNION CARBIDE since 1898, and the many years of experience acquired in generating and handling acetylene are available to you at Portland.

3. **Favorable Transportation.** Plants located in Portland enjoy strategic transportation advantages. Five major railroads and a number of motor-truck lines serve the area. Portland also has the advantage of a deep-water harbor. Shipment of your products can be made by water between Portland and West Coast cities in the United States and Canada.

4. **Power at Low Rates.** Hydro-electric power can be purchased at economical rates. Bonneville Dam (pictured above) is nearby.

UNION CARBIDE is also produced at Ashtabula, Ohio; Niagara Falls, New York; and Sault Ste. Marie, Michigan. Bulk shipments to chemical users can be made from any of these plants, including Portland. Drum stocks for industrial users are maintained at 111 warehouses throughout the United States.

Whatever your plans or requirements, you are invited to telephone or write to LINDE'S CARBIDE-ACETYLENE DEPARTMENT for technical and sales information.



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BROOKLYN POLY'S MARK: For better polymers, he's counting on the . . .

Molecular Engineer

Tailoring the molecule for the job is the brightest new idea in polymer research.

Superior new polystyrenes and polyethylenes are among the first practical fruits of this effort.

But a host of valuable new graft-, block-, and spatially tailored polymers are in the offing.

A meticulous dresser doesn't order clothes from a mail-order catalog. He goes to a tailor who fashions a suit to his measurements. Carry this analogy into polymer research and you get an idea of the strong new force that is changing the shape of polymer development. Simply, the shift is in the direction of synthesis techniques capable of building polymers to fill a broad spectrum of performance requirements in plastics, films, synthetic fibers, etc.

Herman Mark, soft-spoken head of Polytechnic Institute of Brooklyn's Polymer Research Institute and a polymer scientist of well-recognized achievement, this week defines the trend as "an attempt to learn a great deal more about the innermost secrets of macromolecular architecture . . . use this knowledge to scientifically fashion new polymers with properties never before observed."

Termed "molecular engineering," this approach is a sharp departure from traditional polymer synthesis techniques: e.g., juggling the ratio of monomers in copolymers; substituting branched for unbranched chains; varying the degree of branching and cross-linking; and other gambits primarily aimed at elevating melting points and altering molecular-weight distribution.

The molecular engineer, by contrast, is not content with the relatively limited results accruing from these superficial structural changes. His aim is to build a wide range of properties (e.g., solubility, tensile strength, heat resistance) into a polymer by (1) inserting definite chemical groups at specific places in the chain, (2) attaching special branches to the chain, (3) using energy (heat, radiation, etc.), chemical reagents, and carefully controlled polymerization conditions to vary the spatial configuration (or solid geometry) of the chain.

Polymers produced by the first two methods are known as block-* and graft-copolymers, respectively. Unlike ordinary copolymer chains—in which two different monomers are arranged alternately or at random—block copolymers are made up of long alternating stretches (or blocks) of the individual monomers (or different copolymers). In grafts, one component serves as backbone of the polymer while the other attaches to it (at regular space intervals) as branches.

The last-mentioned approach influences such spatial characteristics of the chain as kinking, freedom of rotation at various points, etc.

It's not surprising that this theoretical attack on polymer development is being pushed vigorously at educational institutions. What is somewhat unexpected is the commercial value of the substances developed by these nonindustrial probers.

A superior new polystyrene, synthesized by Italy's Professor Julio Natta (at Milan Polytechnic Institute) is a good case in point. Higher melting (above 200 C vs less than 100 C for ordinary polystyrene) and possessing greater impact strength than previous forms of the plastic, Natta's polystyrene – Mark reveals – will be produced by Montecatini. Process details are a well-kept secret.

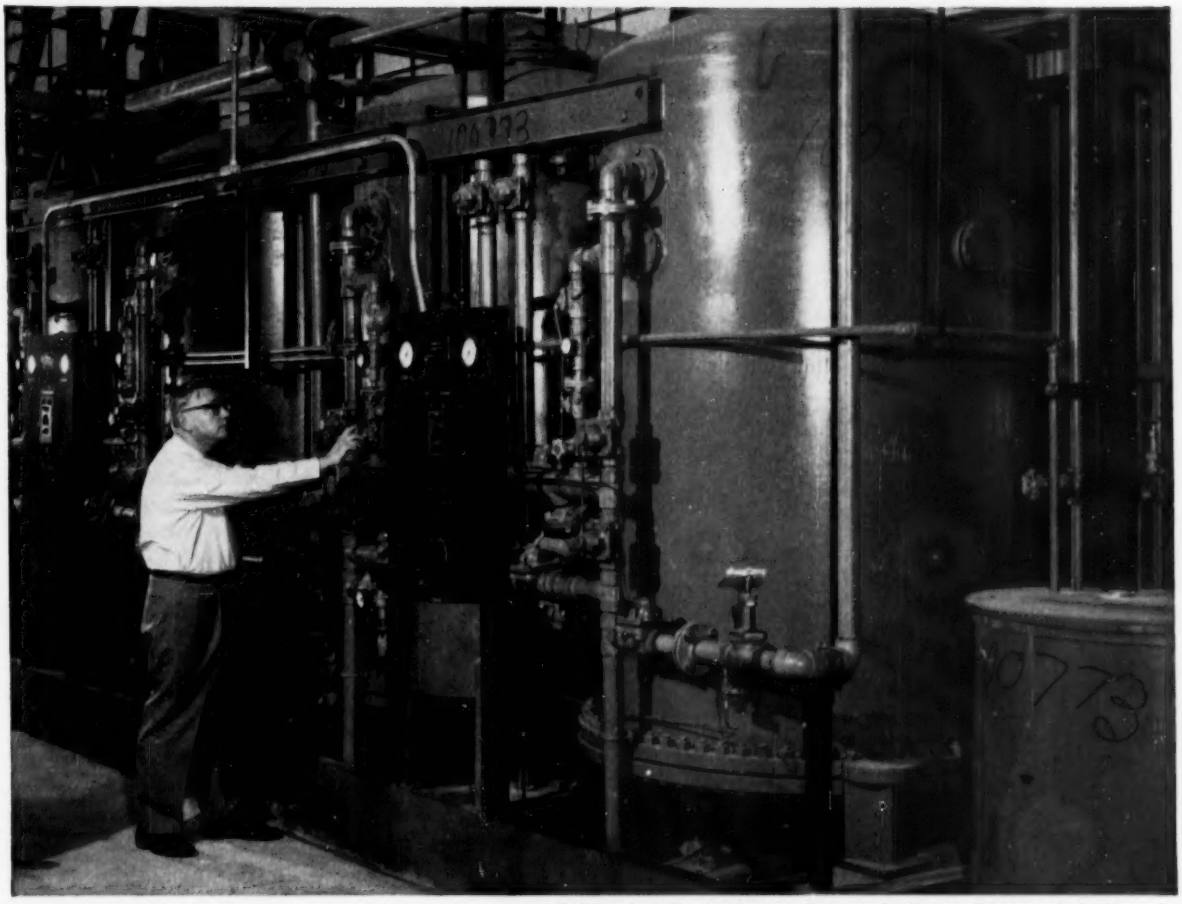
Another development, cited by Mark as evidence of progressive polymer research, is Professor Karl Ziegler's high-melting, high-molecular-weight polyethylene developed at the Institute for Coal Research, Meuhlein-on-the-Ruhr, Germany. Ziegler's process, now being pilot-planted by Bakelite Division of Union Carbide (*CW, Feb. 26, p. 66*) has the research attention of half a dozen other companies. At least one of these should also be turning out the heat-resistant polyethylene in the near future.

In the elastomer family, Goodyear's Chemigum SL (*CW, July 17, '54, p. 66*) is a good illustration of the block polymer principle. Here, glyco-adipic polyesters are hooked up with diisocyanates (which lengthen the chain, serve also as cross-linking sites when abetted by water, glycols, diamines, or amino alcohols.) Polyurethane rub-

* So named by Imperial Chemical Industries' George Tuckett at a Gordon Research Conference on textiles in 1952.

Another new development using

B. F. Goodrich Chemical *raw materials*



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IF you've dreamed of cutting piping costs in half, listen to this: On a major piping installation, General Electric Appliance Park changed earlier planning and used pipe made from Geon rigid vinyl... results show a fine job at much lower cost.

This corrosion resistant Geon pipe carries deionized water at 300 psi in lines ¾″ to 2″. Fittings are made from Geon, too, by a new injection molding process that provides appreciably greater strength and dimensional accuracy.

Geon rigid vinyl piping costs much less, and in many cases proves more serviceable than high grade steel and alloys. It is light in weight, saves money in installation and changeovers. It resists acids, alkalis, oil and gas . . . has exceptionally high impact strength.

Geon polyvinyl materials make possible many economies and improvements, point the way to increased sales and profits. Geon materials are available in many forms for use in many products—upholstery, flooring, sponge, wire and cable insulation, and a host of others. To find how Geon can fit into your future, please write Dept. K-4, B.F.Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.

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'When we know the innermost secrets of molecular architecture, we will . . .

bers of this type feature high resistance to abrasion, oil, ozone and aging. Tensile strength and load-bearing capacity are also a notch above the best GR-S polymers.

Right now, elastomers of this type are still in a very active research stage because of certain shortcomings (cold flow under load, fair-to-poor resistance to hot water or oil, etc.) that must be overcome. And the difficulty of bonding polyurethanes to regular rubber has so far militated against their use in one potentially high volume market—tire treads.

Notwithstanding the imposing appearance of such hurdles, there's a strong possibility they'll be surmounted before long by researchers using a "molecular engineering" approach.

Detergents are among the first block polymers to make good. Unveiled late in 1950, Wyandotte Corp.'s Pluronics (nonionic detergents) are block copolymers with a center block of polypropylene oxide and two end blocks of polyethylene oxide. Newer are the firm's Tetronics, which differ in having four end blocks (two at each end) of polyethylene oxide. Wyandotte is synthesizing new surface active agents by varying the molecular weight of the center portion and adjusting the ratio of ethylene oxide.

Another newcomer to the block-polymer fold is Westinghouse's thermally stable wire enamel (reportedly capable of resisting 10 years' exposure to temperatures up to 135 C), which contains alternate links of polyester amide and epoxy resin.

"In England," reports Mark, "Graft polymers are now being produced on a commercial scale by the British Rubber Producers research laboratories in Welwyn Garden City (near London). These are obtained by grafting vinyl branches (consisting of styrene, methacrylate, or acrylonitrile) onto natural rubber. These copolymers have improved abrasion resistance, are less sensitive to oil and gasoline."

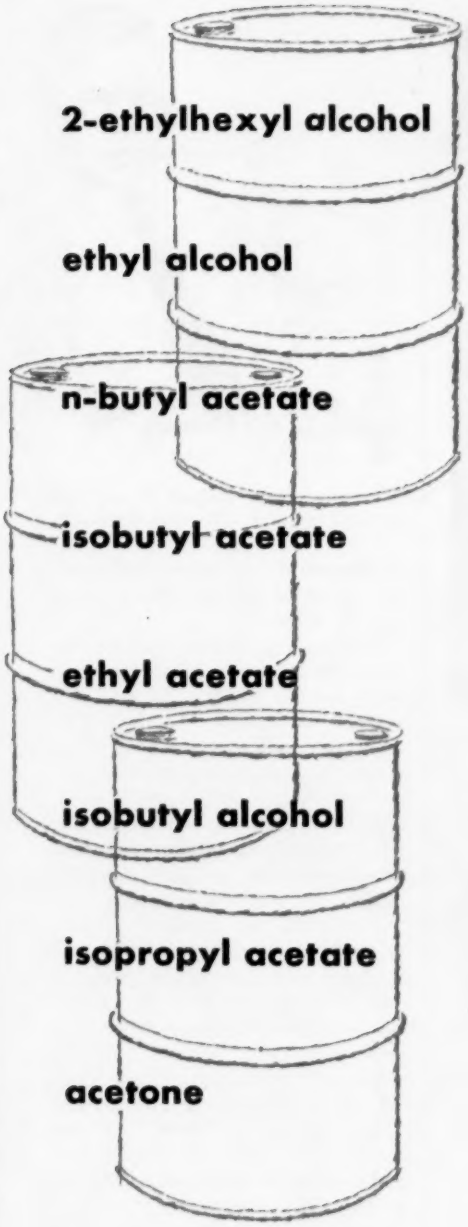
Also, Minnesota Mining & Mfg. Co.'s new fluoroacrylate rubbery polymers (*CW, Oct. 11, '52, p. 31*) come close to the graft principle, consist of an acrylic backbone surrounded by fluorinated groups. These products possess an unusual combination of properties: softness at low temperatures, resistance to heat, and negligible swelling in oil and gasoline.

Analytical Approach: Polymer synthesizers, both industrial and academic, are getting a lift from their analytical confreres. "New high-precision methods to characterize macromolecules now being worked out promise to be essential tools in the design of future polymers," maintains Mark. "Nuclear-magnetic resonance methods, for instance, have been applied to the study of mobility in polymeric systems, particularly molecular-chain flexibility at low temperatures. This technique gives an idea of the mobility of segments of a macromolecule by subjecting them to microwaves in a magnetic field. Notre Dame University's Professor Eugene Guth and Washington University's (St. Louis) Professor George Pake have been spearheading this research.

"Another highly promising development is the improved Debye light-scattering method of gauging the size and shape of macromolecules in solution (particularly important to protein chemists). Much of this work is now going on at Harvard University under Professor Paul Doty.

"What could be one of the most important finds yet, a mathematical tool to predict the physical properties of a new polymer, is taking form under the combined attack of the University of Wyoming's Fritz Bueche, Franklin Institute's Prince Rouse, and General Electric Co.'s Bruno Zimm. This is a method to compute the response of macromolecules to deformation by much the same principles used to determine the response of an object (e.g., a bridge) to pressure, stress, or shear. Thanks to the work of Bueche, Rouse and Zimm, there's hope that

. . . fashion new polymers with properties never known before.'



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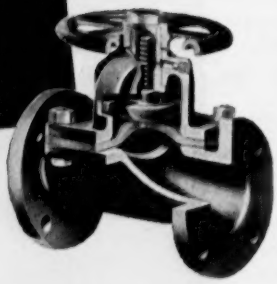

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'The molecular engineers are just getting started. Give them time.'

mathematical data, alone, will permit the design of polymers for a host of specific purposes."

Conjecturing on just what polymer properties may eventually be achieved, Mark has this to say: "It's not inconceivable, for example, that the gap between the softening range of transparent organic materials like polymethylmethacrylate (around 100 C) and that of glass (around 400 C) may some day be bridged to produce transparent, colorless, and hard (but not brittle) high-melting organic glasses.

"Using the new tools of polymer research, it's highly probable that materials with outstanding properties will be obtainable both from vinyl-type addition polymers and from polycondensation products (like the nylons and polyesters). What's more, the differences between major classes of polymers as we know them now may be expected to disappear as more and more block- and graft-hybrids are made."

Just what structural forms the polymers of tomorrow will take is something that Mark cannot foresee. But he displays no doubt that radically new and useful polymers are in the offing. "The molecular engineers," he notes, "are just getting started. Give them time."

And, in Mark's estimate, the wait for results should not be excessively long. His optimism is rooted in first-hand knowledge of the considerable research energy going into the cultivation of the new territories of polymer science.

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Typical Applications. The starting material for sulfonation into both household and industrial detergents. Finished detergent products can be in either flake, granule, bead, powder, paste or liquid form.

Surface Active Agents

Slurry. An intermediate paste-type detergent product resulting from sulfonation of Alkane followed by caustic neutralization.

Typical Applications. With a small investment, Slurry can be processed into either liquids or dry detergents in flake, granule, bead or powder form. Also used in paste form by processors and manufacturers as a wetting agent, emulsifier, emulsion breaker and flotation reagent.

Wetting Agent. A low-foaming, semi-fluid anionic surfactant that is highly soluble in water.

Typical Applications. Useful in most cases where a surfactant is required, particularly where low salt content is mandatory.

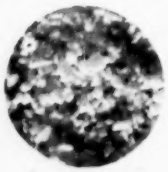
Wetting Agent "S." A paste-type surfactant in concentrated form.

Typical Applications. Used extensively in emulsion-type weed killing products and in various industrial uses —rug and upholstery washing, processing fruits and vegetables, liquid cleaners, additive in surface coatings, and in compounded insecticides and herbicides.

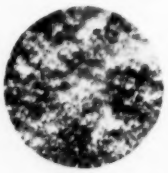
Detergents D-40, D-40SF, D-40FG and D-60. High quality, competitively priced sodium alkyl aryl sulfonates in flake, granule and powder form. Exceptionally uniform in all their properties, including color and odor.

Typical Applications. Exceptionally effective in cleaning, wetting, dispersing and foaming, offering a variety of industries new economies in processing and product formulations. Used "as is" or blended with builders or other products, D-40 finds extensive use in household cleansers, washing products for home and industry, improving concrete and pre-cast concrete products, fire fighting, textile processing, air polution control, leather processing, mining and surface coatings.

D-40 Flakes



D-40 Granules



D-40 Powder

Dispersant NI-O. An oil-soluble nonionic surface active agent with outstanding properties for emulsifying water in oil. NI-O offers efficient emulsification, dispersion, detergency and other properties in oil and solvent media.

Typical Applications. Has found wide-spread use in dry cleaning industry where it is used as a component of dry cleaning soaps for either batch or charged systems.

Dispersant NI-W. Water soluble, low-foaming nonionic product with outstanding dispersive, deterging, wetting, emulsifying and penetrating properties. Completely soluble in hard or soft water and in such common solvents as acetone, the lower alcohols and mineral spirits.

Typical Applications. Used in compounding heavy duty household and industrial detergents, liquid dishwashing products, metal cleaning, institutional sanitizers, rug cleaning, textile processing, agricultural chemicals, insecticides, polishes, leather processing and cosmetics.

Sodium Sulfonates. Viscous liquids of low water and inorganic salt content predominantly oil-soluble.

Typical Applications. Used principally as emulsifiers in soluble cutting oils, in agricultural sprays and oil well drilling compounds.

Phenol

Oronite, with complete control of all basic raw materials in its manufacturing process, is truly a 100% basic source of supply. Thus you are assured of a reliable phenol source, service and product when you need it. Oronite Phenol exceeds U.S.P. specifications.

Typical Applications. A basic ingredient in molding powders for plastics, in phenolic resin adhesives for the plywood industry, in lube oil additives; as a selective refining agent in Duosol process of lube oil refinement; as an intermediate for manufacturing other chemicals.

Oronite's New Phenol Plant, Richmond, Calif.

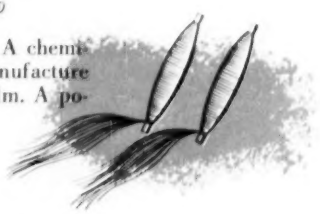
Acetone

Oronite Acetone (CP) is a colorless, fragrant, flammable liquid that more than complies with ASTM requirements.

Typical Applications. As a vehicle in nitro-cellulose lacquers, varnishes, rubber cements, and in the manufacture of rayon, celluloid and cellulose acetate plastics. Often used as a solvent, cleaning agent, extracting medium and intermediate for other chemicals.

Para-Xylene 95%

Typical Applications. A chemical component in the manufacture of polyester fiber and film. A potential intermediate for synthesis of numerous other chemicals.



Research Facilities

Oronite's research and product development headquarters are centered at California Research Corporation, Richmond, California. Here at Richmond (pictured below), and at El Segundo and La Habra laboratories, over a thousand men and women staff a research organization that is second to none. Scientists here have provided Oronite with many "firsts" as they constantly strive for revolutionary new and better products.

Ortho-Xylene

Typical Applications. A liquid chemical intermediate for manufacturing phthalic anhydride and potential other chemicals.

Copper Naphthenate 8%

A solution of the copper salts of mixed naphthenic acids in petroleum solvent.

Typical Applications. An effective preservative for all types of cellulose products against attacks of such organisms as bacteria, fungi, wood parasites and marine organisms.

Isophthalic

A new industrial organic chemical!

Large quantities will be available from Oronite late in 1955, from new plant now under construction. Oronite Isophthalic is a white crystalline product containing a minimum of 98% of the meta isomer and approximately 2% of the para isomer. Both isomers are active and useful in most end-use applications.

Typical Applications. A major use will be found in surface coatings, where alkyd resin formulations, based on Isophthalic, will permit production of improved house paints, all types of enamels and other compositions. Unsaturated polyesters with improved physical properties—such as tensile, flexile strength, adhesion, heat distortion points, etc. will also be a major consumption field. Uses in plasticizers, dyestuffs and other chemical intermediates are also expected to develop.

New Chemical—Pure, White Crystalline Isophthalic

Phthalic Anhydride

A high quality, low cost versatile dibasic anhydride of minimum 99.7% purity.

Typical Applications. Used as a starting material in the manufacture of alkyd resins for the protective coating field; in the esterification of alcohols and in the production of dyestuffs and dye intermediates.

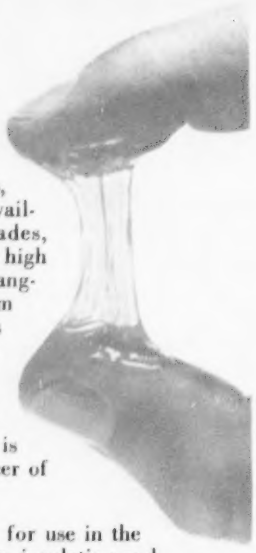
Maleic Anhydride

A white, crystalline product containing a minimum of 99% purity.

Typical applications. Widely used in the manufacture of synthetic resins, plastics and dyestuffs.

California Research Corporation's extensive research headquarters, Richmond, California.

Polybutenes



Chemically inert liquids, nearly water white in color. Available in several different grades, varying from moderate to very high viscosity and tackiness, and ranging in molecular weight from about 400 to 1600. Polybutenes do not become gummy or waxy and do not harden, darken or change in any essential property over long periods of atmospheric exposure. Oronite is the original and major producer of Polybutenes.

Typical Applications. Ideal for use in the preparation of sound deadening, insulation and calking compounds. Because of their outstanding electrical properties Polybutenes are especially suited for use as dielectrics in high voltage cables, condensers and capacitors. Widely accepted as viscosity improvers in greases and adhesives and as plasticizers or extenders for a wide variety of molded rubber products.

Naphthenic Acids

These organic acids, derived from petroleum, contain a substituted naphthenic ring structure. Available in several grades, varying primarily in acid number.

Typical Applications. Oronite Naphthenic Acids react readily with alkalis and metallic oxides to form metallic naphthenates. These naphthenates possess powerful fungicidal and bactericidal properties and are used for preserving wood or fabrics and as driers in the manufacture of paints.

Lubricating Oil Additives

Oronite specializes in "custom-formulating" lubricating oil additives to your exact needs—meeting your price and performance specifications. Oronite's various additives impart the following properties to a base oil: detergency, resistance to oil oxidation, resistance to engine corrosion, anti-rusting and "E.P. Performance."

Typical Applications. As ingredients for base oil stocks to provide superior motor oils for gasoline and diesel engines and industrial oils.

Fuel Additives

Oronite's Fuel Additives inhibit deposit formation in distillate fuels on aging, keep gums already formed in a fine state of dispersion, and impart anti-corrosion properties to distillate fuels. Oronite Additives are especially effective in the presence of water—the usual storage condition.

Typical Applications. A low viscosity fluid which can be readily mixed with distillate oil stocks. Easy and economical to use, and greatly assists in keeping home heating systems clean and trouble free. Low cost method of eliminating filter clogging, nozzle plugging, and corrosion characteristics of many distillate fuels—e.g., burner oils, diesel fuels and jet fuels.

Gas Odorants

Oronite provides a complete line of malodorants to meet all requirements of the Natural and LP gas industries. Since the marketing of the first commercial gas odorant in 1927, Oronite has been a major producer and leader in the field.

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WIDE WORLD

NSF'S WATERMAN: His task, demolishing a specter.

Storm Warning

The specter of basic research domination by the National Science Foundation has been raised by the chairman of the Congressional committee that holds the agency's purse strings. It's problematic whether this argument—brought out in testimony made public last week by a House Appropriations subcommittee—will be a significant obstacle to approval of the foundation's $20-million budget request.

But the line of questioning, termed "totally unexpected" by one NSF official, does not bode well for the foundation.

The charge of research domination was raised by Rep. Albert Thomas (D., Tex.) who, as chairman of the subcommittee that recommends appropriations for such independent agencies as NSF, wields a lot of influence on money matters.

Thomas specifically raised the question of NSF's using the $11 million of federal grants "for support of science" to warp university research projects to the pattern set in Washington. (NSF asked $18.2 million for the coming year.) NSF splits this money among schools in most of the 48 states to finance: research projects; graduate work in needed science fields; and—to a certain extent—reviews of its programs by boards of scientists.

The power of these boards to approve or disapprove a university's performance under an NSF grant is one of the things that stirred Thomas to his sharpest criticism. Thomas characterized these board members—who are paid on a per-diem basis—as "agents" through which a government unit with money to grant (or withhold) might eventually dominate the science programs of our colleges and universities.

Here's part of the exchange that took place between Thomas and Alan T. Waterman, director of the foundation, during closed hearings last month:

Thomas: It is not going to be very long before you have a charge thrown in your face, and you are going to have a hard time defending it, that the National Science Foundation is trying to take over the colleges and the universities in this country and lay down the pattern and control, through a federal bureau in Washington, the education and training of college students and scientists . . .

Waterman: . . . . Mr. Chairman, I hope we make ourselves quite clear. I am sure our friends and colleagues in science and in the universities know that we are not planning to mastermind the educational pattern from Washington. You will notice we have no large educational program which we are trying to operate . . .

Thomas: You jump from about $200,000 four years ago up to $20 million.

Waterman: This is not all training. The education and science program is largely a matter of conferences and studies to determine what should be done.

Thomas: It is what you lay down. You offer this bait to the colleges and universities. "If you want this money, you take it through this channel. We are the masterminds. This is what we want you to do. If you want this money, you do this, or you do that or the other." Is that correct?

Waterman: No, sir, I would not say that.

Thomas: What would you say?

Waterman: The people holding the conferences . . . are in the educational field.

Thomas: I understand. They are acting in a capacity as consultants to the National Science Foundation. That action is, in truth and in fact, the action of the foundation, is it not? Call it any way that you want to, that is what it boils down to; is that not right?

Waterman: We want their advice and independent scientific judgment on the matter. We want their opinion as to the scientific value.

Thomas: Go ahead. You get their opinion and then what?

Waterman: We do. These things are subject to the review of the divisional committee (which is appointed by the board) of scientists in the broad fields such as biology and medicine.

Thomas: These are agents of the foundation. Call them whatever you want to, consultants, friends or paid employees, they are still your agents, are they not? . . . They are doing your work. They are acting by virtue of your authority. So it comes right back to the question I raised. They are doing your work and at your bidding. If they do not like it, out the window it goes.

Waterman: It is quite like an expert witness in a court, Mr. Chairman. He is called in because he is an expert and not to prejudice the case. Surely scientists have this function.

Thomas: I have never heard of anyone calling in an expert witness unless they were to pay him and unless he was to testify favorably to those calling him.

Waterman: The other side can also call in an expert witness. The whole training of a scientist is to view progress in science as objectively as possible.

Thomas: We understand what you are talking about. You say you are aware of the subject I raised, and that it is of some concern to you. My purpose was to point it out to you. You are aware of it, sir. You go ahead with your statement.

Waterman: If you would like, in the interest of saving time, I can submit the statement.

Thomas: No, you go ahead and discuss it. . . .

While the fund recommendations of a subcommittee chairman may be overridden by the full committee, or by the House, this is rarely the case. Consequently, the outlook for expansion of NSF activities is not too bright.

•

Synthesis First: Moscow's (U.S.S.R.) Institute of Organic Chemistry (Academy of Sciences) claims a new method of synthesizing acetylenic alcohols. The technique involves saturation of powdered potassium hydroxide in diethyl ether with acetylene in a metallic reactor at 5-10 atmospheres. Synthesis details include addition of an

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aldehyde or ketone, stirring for a half hour, release of pressure, treatment with water, and neutralization by carbon dioxide. The product is extracted with ether.

•

Germanium Offshoot: A brand-new field of chemistry could be shaping up around germanium, as a result of the work of Harvard University researchers D. Seyferth and E. G. Rochow. They reacted diazomethane with germanium halide to prepare chloromethyltrimethyl germane – a likely intermediate for interesting and potentially valuable germanium compounds. The analagous silicon compound milestoned early work in silicone chemistry.

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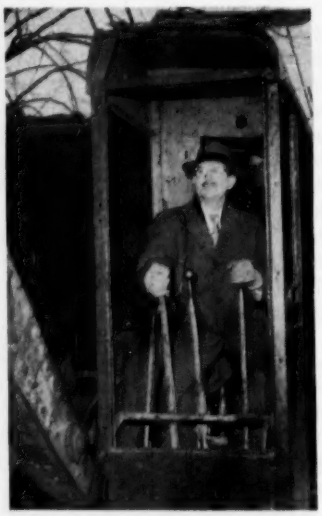
New Lab: Du Pont plans a $0.5-million lab at Chestnut Run, Del., for fluorinated hydrocarbon research, expects to complete the facility by early '56.



Gaining Ground

TAKING THE DIRECT approach, Warner-Chilcotte research director, George Mangun, breaks ground for a new pharmaceutical laboratory at Morris Plains, N.J. The building will quadruple his firm's present research space at the site, marks the third such expansion in seven years. Mangun heads studies in pharmacology, physiology and virology.

How "Dutch Boy" Chemicals help

the flooring industry

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Elsewhere in the vinyl resin field, several other Dutch Boy Stabilizers are widely used. Each is a specific for problems of discoloration or deterioration occurring from process heat, during shelf life, or in ultimate consumer use. These versatile Dutch Boy Chemicals are behind recent improvements in unbreakable records, belting, shoes, luggage, films and sheetings, electrical insulations, tubings and similar products.

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PFIZER TEAM:† New skills in an old art.

It's All in the How

Back in the early 1880's, Max Klinger, pining for a clear, solid material,* took a few liberties with the Forty-Second Psalm to pen these words on a corner of his drawing: "As the hart panteth for waterbrooks . . . (so I) . . . for itacon." Had he been at the Chemists' Club last fortnight, he would have had to pant no more: Chas. Pfizer revealed it had geared up to produce itaconic acid in commercial quantities (CW Newsletter, March 26).

Itaconic acid, of course, can't be classed as a new chemical by any stretch of the imagination. It was isolated as long ago as 1837. Even Pfizer's interest goes back to 1938. What is new is the process that's being used. Here's why:

When Pfizer first started offering itaconate, it was asking 45¢/lb. for it. At that price, it found plenty of takers. The difficulty was that Pfizer just couldn't make it economically in any decent quantities for that price. It tried both fermentation and synthetic (pyrolysis of citric acid) methods.

The citric acid route was discarded as being inherently too costly. The fermentation process, however, showed promise. It was probed, polished and proved to the point where Pfizer feels it's now economical. Specific details of the technique are a well-kept company secret. Pfizer merely says that the biggest complaint against the original fermentation method was that it required sugar, a relatively expensive starting material. The new method, it says, utilizes a "low-cost carbohydrate based on beet or cane."

The immediate speculation was that Pfizer is using molasses. More likely, however, is that it's starting with high-test cane molasses. Formed by milling the cane, clarifying the resulting juice and then partly inverting it, the high-test material runs 78% sugar, sells for approximately 1½¢/lb. of sugar contained. This is a considerable saving over straight sugar at about 8.5¢/lb.

Skilled in the Art: The fermentation method of producing itaconic is an established reaction. Researchers of the U.S. Dept. of Agriculture, for instance, have done considerable work in the field, developed a tray fermentation method, which they moved as far as a semipilot-plant scale.

Pfizer's key patent (U.S. Pat. 2,385,283) covers a submerged aerobic fermentation. In it, a sugar source, sodium nitrate and sodium alginate are inoculated with a strain of *Aspergillus terreus* spores and kept at 34-38 C. The mixture is agitated mechanically for seven days, at which time the fermentation is stopped.

Improvements and additions to the basic technique, as Pfizer points out in the patent, will "occur to those skilled in the art." And skill in the art of fermentation is something that Pfizer is counting on heavily. It has already started a big promotional push behind itaconic, feels that now that it's freely available, it should catch on with industry like a spark in a tank of ether. Moreover, it freely admits that itaconic is merely the first of a whole line of fermentation chemicals due to get similar treatment.

Mixed Reaction: Just how successful it will be with itaconic remains to be seen. There's no doubt that with two carboxylic acid groups and a free-wheeling (unhindered) double bond (*see box on next page, Where Can Itaconic Go?*), its molecular configuration has decided eye appeal for the chemist. Enthusiasm among potential customers is running high. And early investigators are unanimous in agreeing that it's a highly versatile building block. G. F. D'Alelio,* for example, one of itaconic's most ardent boosters, sees nothing but a successful future for it.

On the other hand, some feel that itaconic has a long way to go before it can be classed as a chemical of commerce. Even some rabid fans of the fermentation method think the acid does not show the technique off to its best advantage. They point to the price Pfizer is asking (60¢/lb.) and compare it with maleic anhydride (27¢/lb.). Both have the functionality of two carboxylic acid groups plus a double bond. Though they admit that the double bond in itaconic is in a better spot, they do not think the price differential is warranted. Also, they point out that Pfizer's original selling price for the material was 45¢/lb. This, they feel, is not progress.

But as Pfizer is the first to point out, the difference is that now a customer

† The men responsible for developing Pfizer's itaconic process. Left to right (seated): Abraham Bayley, supervisor of chemical research; Jaspar Kane, vice-president, research; Alexander Finlay, assistant director, biochemical research; Edwin Ratajak, biochemical research and development. Left to right (standing): Edwin Honohan, development supervisor, chemical research and development; Andrew Schmitz, head, biochemical process development; Irving Toplitzky, chemical research and development.

* The artist Klinger wanted it to represent water for a proposed statue. Itaconate was suggested to him by Richard Anschutz.

*Former director of plastics labs, General Electric; vice-president and director of research, Prophylactic Brush; manager of high-polymer research, Industrial Rayon; assistant director of research, Koppers, he now heads up Notre Dame's chemical engineering department.

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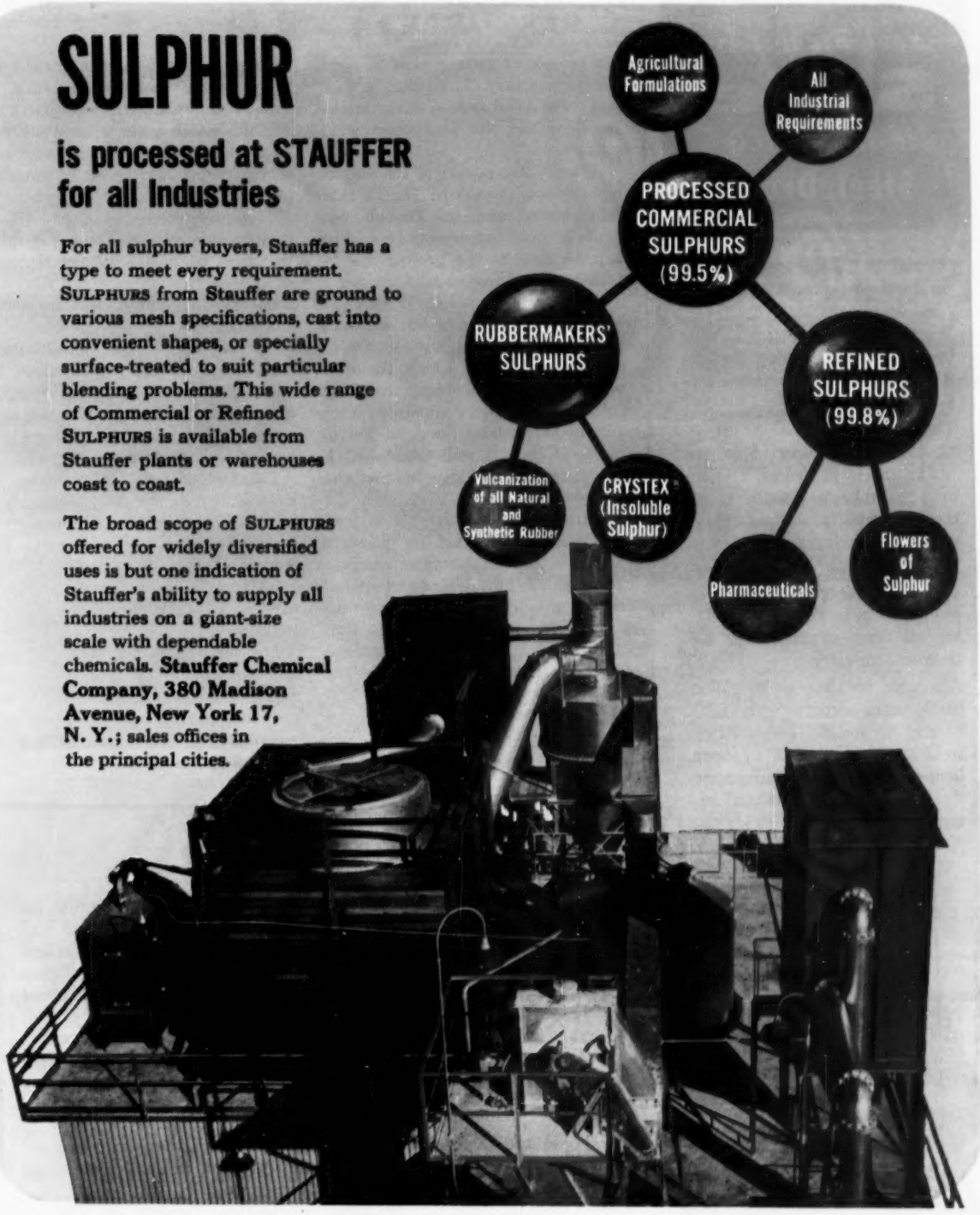

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can be sure of getting what he needs for volume uses. The price, it feels, will come down as soon as the market broadens and the production is increased.

Actually, the pricing of the itaconic represents a portion of Pfizer's carefully planned campaign. Though eventually it could conceivably be sold for a price close to the present one for maleic, it could never hold its own in a price war with maleic. What Pfizer hopes to do is to establish a market for the product in the 40-60¢/lb. range. At that price, it feels, the product will command a sizable market. It could, for example, compete with the alkylated pyridines used in acrylic fibers. Once it is well established in that range, other bigger-volume outlets would be wooed.

Fermentation's Future: Aside from the immediate impact on potential customers and producers of competitive products, Pfizer's renewed interest in itaconic carries a significance for the entire industry. For it signals a start of an all-out drive in fermentation chemicals. Pfizer technologists, in fact, feel that industrial fermentation is at the stage now that chemicals derived from petroleum were 30 years ago.

President John McKeen is fond of saying: "We live in the shadow of obsolescence." And fermentation is Pfizer's solution. The equipment is flexible, which gives a company not only a lot of latitude in its production schedules but also speed in bringing out new products.

Moreover, there's no question that fermentation can turn out products that can't be made economically any other way. Sometimes it can turn out products that simply can't be made any other way.

By the same token, fermentation processes don't lend themselves to automatic control and production as do synthetic processes. And the raw materials for fermentation have a history of wide fluctuations in price.

Pfizer admits that though the prices have fluctuated, the trend in price has been constant compared with the trend of coal tar or petroleum. By long-term contracts or other means, moreover, it's possible to either eliminate or reduce the price variations considerably.

For the really long-range viewer, of course, unlimited agricultural raw materials are a logical alternative to abundant but limited petroleum and coal reserves. Pfizer may be merely anticipating the inevitable.

Where Can Itaconic Go?

A potentially versatile chemical building block, itaconic acid has two carboxylic acid groups, a conjugated double bond and an allylic methylene group activated by a carboxyl. A host of investigators, notably D'Alelio, have looked into applications for it; over 60 application patents have been granted on it since 1940. Its availability in commercial quantities, Pfizer feels, will help it find jobs in:

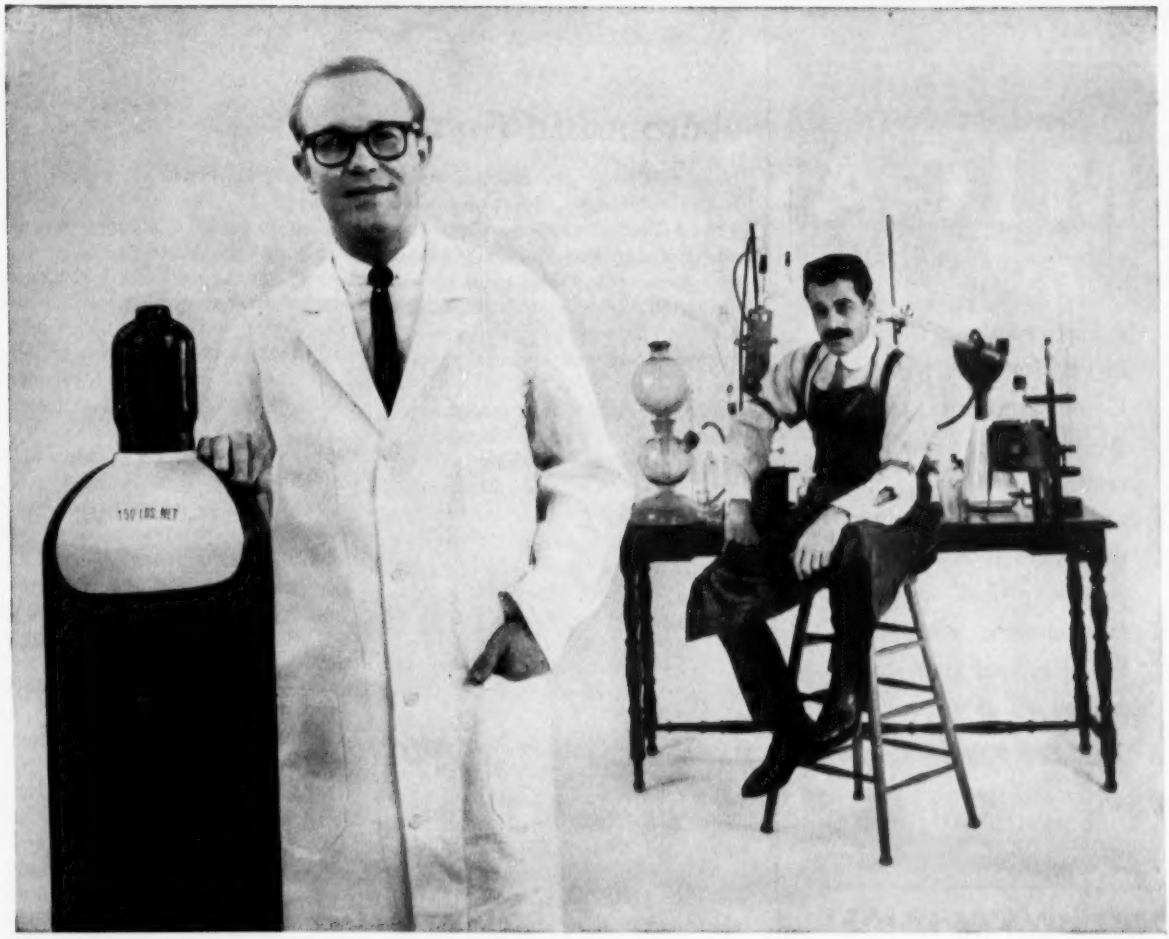
Fibers. It can be polymerized with acrylonitrile, vinyl chloride and other vinyl monomers to form polymeric fibers. It might, for instance, compete with pyridine derivatives to make synthetics more amenable to dyeing.

Plastics and Resins. Copolymers of itaconic acid with styrene or one of the methacrylates yield transparent plastics with good optical properties. It could substitute for maleic anhydride or fumaric acid in alkyds. Condensation of the acid with glycols in the presence of glass cloth or fiber turns out a structural plastic that can be molded at contact pressure. The low-molecular-weight diesters of itaconic are also potential cross-linking agents for unsaturated polyesters and diisocyanates.

Ion Exchange. Copolymers of diallyl itaconate exhibit ion exchange properties.

Plasticizers. Diesters of itaconic formed from high-molecular-weight alcohols can plasticize vinyl chloride resins.

Lube Oil. Copolymers of the acid or derivatives with unsaturated compounds are good pour point depressants, improve viscosity indexes.



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Automatic Analyzers

"One and one make four" is mathematically incorrect. But it adds up as Consolidated Engineering Corp. (Pasadena, Calif.) and Phillips Petroleum Co. (Bartlesville, Okla.) come up with a quartet of new analysis and control instruments especially designed for the petroleum and chemical processing industries.

Under the terms of a recent agreement, CEC will manufacture and market the instruments along with its regular line of electronic data processing and control equipment. Phillips will continue to act as consultant on refinery and chemical plant applications of the new devices, which it has pilot-produced and service-tested over the past three to five years.

Two Down: All of the instruments are designed for continuous, "on-stream" analysis to eliminate the time lag occasioned by conventional sampling and laboratory analysis procedures. They employ photometering elements similar to laboratory instruments, but operate and record automatically. Two of the four—an infrared gas analyzer and a differential refractometer—have already been ordered into production.

The infrared analyzer measures the concentration of a given component in streams of similar composition. It accommodates from one to five unknown samples plus a standard, is switched automatically by an internal programmer to complete one cycle of analyses each hour.

The differential refractometer continuously compares a product stream with a locked-in sample representing the desired composition of the material at the sample point under optimum operating conditions. Any variation in the product is measured and recorded as the difference in the refractive index between the actual and the desired composition.

It is believed that the refractometer will be particularly effective as a control for fractionating tower operation where samples from an area of rapid refractive index change provide sensitive indication of variations that alter the end product. Suitable also for automatic control of liquid blending, the instrument can be modified to compensate for variable composition of one component by using a flowing stream of the material as a standard in place of a locked-in sample.

Two To Go: The other instruments, which are expected to go into production within the next few months, are an ultraviolet absorption spectrometer and an oxygen analyzer. The ultraviolet analyzer features a unique light modulator that, it is claimed, enhances the specificity of the instrument's response.

The oxygen analyzer operates on a liquid reagent that changes color (optical density) when it reacts with oxygen. It boasts an accuracy of better than plus-or-minus 2% of full scale at ranges of 0-50 or 0-1000 ppm.

All of the instruments employ compact, easy-to-service components built into Group I, Class B explosion-proof housings suitable for use in hazardous locations at temperatures to 120 F.

Though CEC's differential refractometer is believed to be one of the first designed for industrial analysis by continuous sampling, the other types of analyzers are similar to several offered by other manufacturers: Beckman Instruments, Inc. (Fullerton, Calif.) has an oxygen analyzer, will soon bring out a new ultraviolet analyzer. Perkin-Elmer Corp. (Norwalk, Conn.) has had its ultraviolet spectrophotometer on the market for some time. And infrared gas analyzers are available from both P-E and Beckman, as well as from Baird Associates (Cambridge, Mass.), Leeds & Northrup (Philadelphia), Liston-Becker Instrument Co. (Stamford, Conn.), Mine Safety Appliance Co. (Pittsburgh, Pa.).

•

Selling a Line: Another chemical company, Brown-Allen Chemicals (Carlisle, Pa.) may sell its electronic line to Hupp Corp. Directors of the former firm agreed to the deal, which would involve giving up physical assets, inventories and patents in exchange for Hupp stock and cash. Three subsidiaries of Brown-Allen would be affected: Standard Piezo Co., Solid State Research Institute, Inc. and Allied Manufacturing Corp. Hupp is presently engaged in making window regulators, cooling units for homes, power drives for farm tractors. Fine points of the transaction have not been worked out, will be subject to approval by both companies.

FAMOUS LIGHTHOUSES OF AMERICA

Minot's Ledge Light, one of America's most famous wave-swept lighthouses, guards ships against treacherous reefs 6¼ miles southwest of the entrance to Boston Harbor. The first tower at Minot's Ledge, an openwork iron pile structure completed in 1850, was toppled into the sea by a great storm in 1851. The second tower, built of interlocking granite blocks and completed in 1860, still stands solidly on the ledge.

A familiar beacon and safe guide to quality in electrochemicals is the name Niagara Alkali Company, long recognized as a leader in this field of chemical production. Depend on Niagara for quality and good service in Nialk® Liquid Chlorine, Nialk Caustic Potash, Nialk Carbonate of Potash, Nialk Paradichlorobenzene, Nialk Caustic Soda, Nialk TRICHLORethylene, Niagathal® (Tetrachloro Phthalic Anhydride).

NIAGARA ALKALI COMPANY

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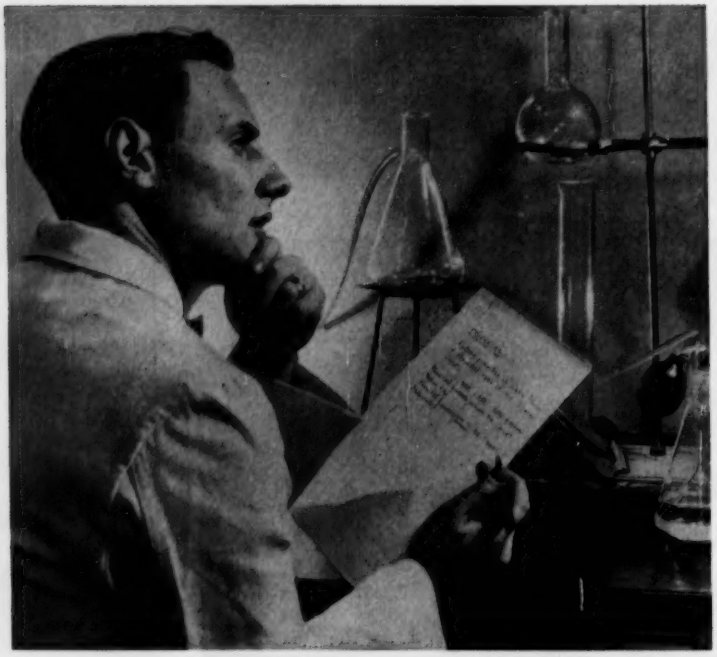
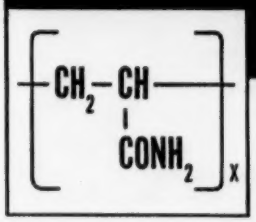


Life on the Chemical Newsfront

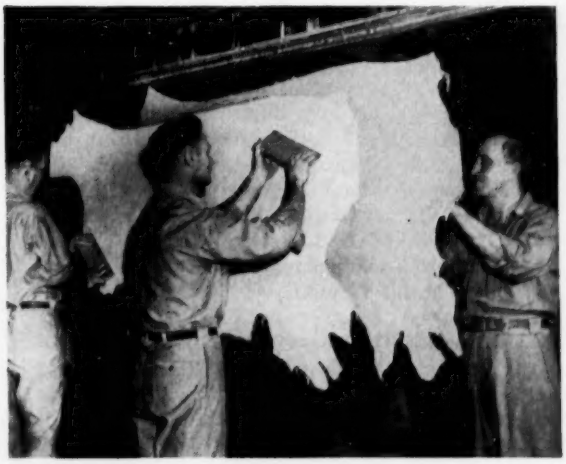
A BIG STEP FORWARD in dyeing yellow papers for writing tablets and other uses is represented by Cyanamid's improved Pheno and Pheno Fast Yellows of the Stilbene Group. These dyes now go into solution faster and possess the superior cold-dyeing characteristics so desirable for the cold-water, quick-pulping equipment generally used in the industry. (No. 1)

NOW VINYL FILM IS "BREATHABLE." Tiny holes by the millions won't affect appearance or strength but they will give new comfort to users of vinyl upholstery materials. Improvements like this have stimulated vinyl production from 40,000 yards in 1940 to more than 450,000,000 yards today. Another such stimulant to vinyl popularity is the durability and long-lasting flexibility imparted by plasticizers made with AERO* Phthalic Anhydride, esterified with various monohydric alcohols. A new Technical Bulletin describing properties and many uses of AERO Phthalic Anhydride is now available. (No. 2)

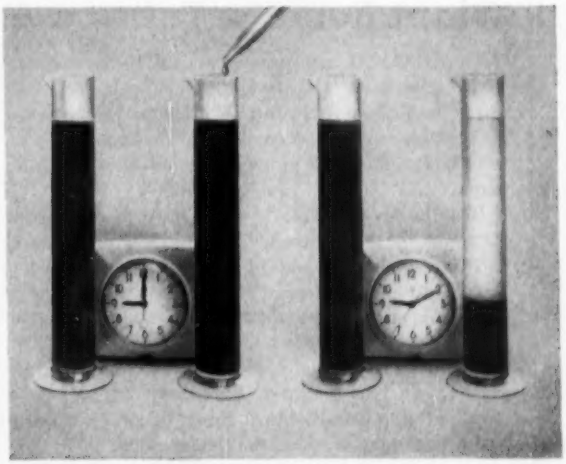
*Trade-mark



ADHESIVES MADE WITH POLYACRYLAMIDE have greater tack when wet, higher strength and water resistance when dry. Slippery by nature, polyacrylamide solutions spread evenly and smoothly thus increasing the adhesive bond. Treatment of surfaces with polyacrylamide facilitates stripping of pressure sensitive tapes and other adhesives. Polyacrylamide, modified by reaction with formaldehyde, yields resins suitable for binding agents in brake bodies, clutch discs, and grinding discs. (No. 3)



WHITE LEATHERS STAY PLUMP AND ROUND through the pasting and drying process with Cyanamid's TANAK® MRX water-soluble melamine resin in tanning solutions. After permeating the leather, TANAK MRX polymerizes to large stable molecules which impart good filling to the stock. The result is leathers with a tighter break, thicker grain and better temper. This gives more footage on the drying plates and permits deeper buffing to remove grain defects without sacrificing normal grain thickness. (No. 4)



AEROFLOC® REAGENTS greatly increase settling and filtration rates by efficient flocculation of aqueous suspensions of ores, mineral and metal particles, industrial wastes, and chemical precipitates. Test illustrated above shows effect of a few parts per million of AEROFLOC Reagent in specimen on right after standing for 10 minutes. First used in the mining industry, AEROFLOC Reagents now are finding wide application in many other industries. (No. 5)

SEND more information on the following items mentioned in the April, 1955 issue of LIFE on the Chemical Newsfront:

C.W

No. 1, 2, 3, 4, 5.

Literature ☐ Prices ☐ Sample ☐ of_____

Name_____

Company_____

Address_____

City_____ Zone____ State_____

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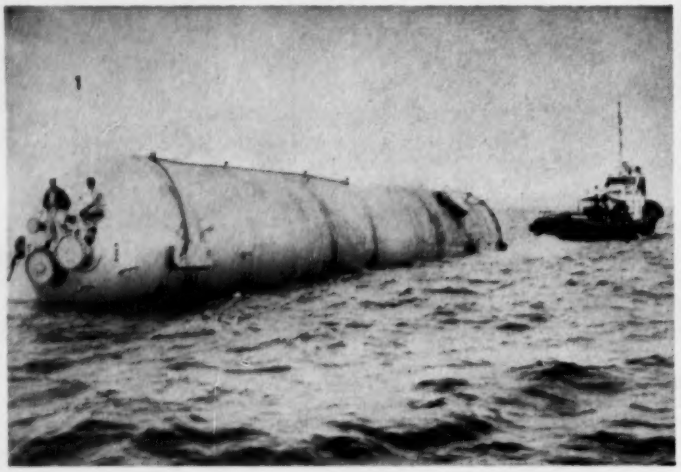
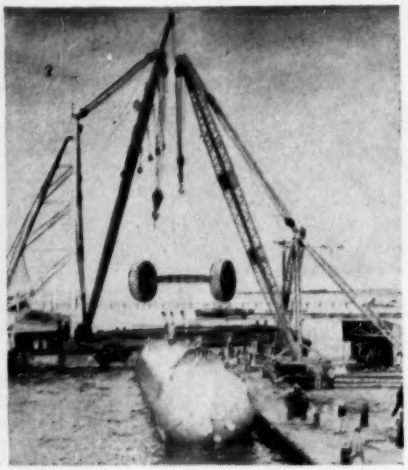
NEW YORK 20, NEW YORK





Giant Reactor Takes a Giant Step

THE ARAMCO engineers who had to move this cat cracker from its fabrication site (Holland) to the job site (the Arabian American Oil refinery in Persia) found themselves in a situation not unlike that of the man who built a fine boat in his cellar and then couldn't get it out.

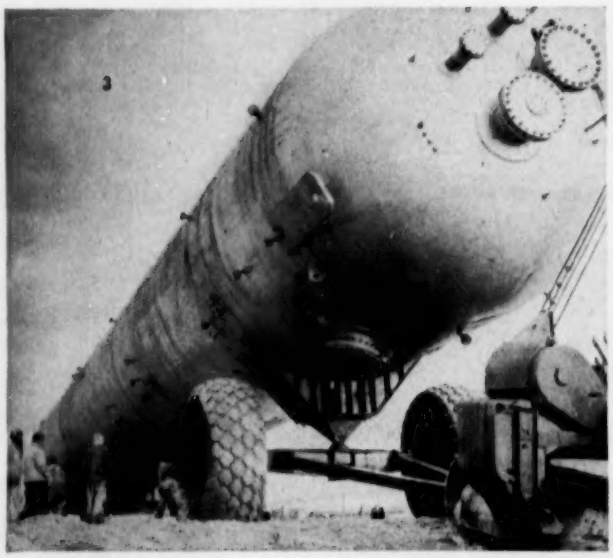
The reactor measures 114 x 16 ft., 9 in., weighs in at 230 tons. Aramco merely had to (a) find a ship with a boom capable of handling such a tonnage, (b) figure out how to get it from the ship to the refinery, and (c) work up a foolproof set of operational procedures covering the 8,000-mile trip.

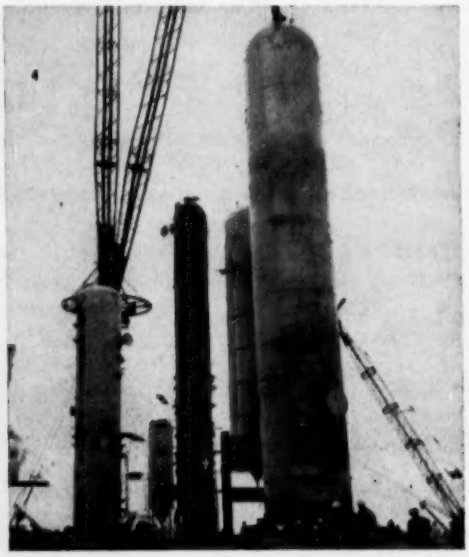
The engineers finally located a locomotive carrier (the Hansa line freighter, *Braunfels*), one of the two ships in the world capable of doing the job, then decided that a beach landing was the best method.

About a mile and a half offshore, the reactor was lowered into the water, towed by a tug to a dock where two large dollies were secured fore and aft.

Then for the beach landing, the vessel was hauled out of the water and across the beach to the road by several pieces of heavy traction equipment. Once on the road it was pulled by a Kenworth tractor truck. Two trucks held in stand-by were used to assist it up the slight grades encountered on the 7½-mile trip to the refinery at Ras Tanura.

At the refinery, it was upended and set in place by a 230-ft. derrick. The job was completed recently without a hitch, and though it won't start operation until July, the Aramco engineers are breathing easily. For a while it looked as if they might have to tear down the whole house to get the boat out.





Put that

Corabrite sparkle

in your corrugated box!

Corabrite—H & D's new corrugated board—is several shades brighter than ordinary corrugated board—and smoother, too (you can feel the difference). And, it's uniform in both respects.

Result: You get a cleaner-looking box . . . more color contrast . . . and a consistently better printing job. Even so, Corabrite won't cost you a penny more than ordinary corrugated board. And that's worth talking about. Let's do.

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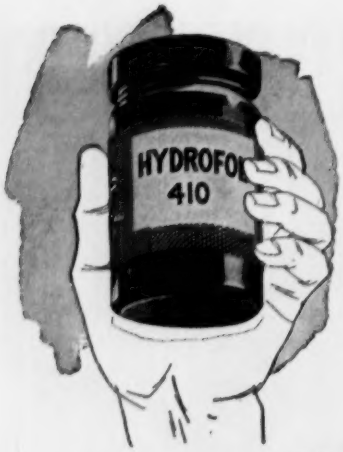

TWO
Hydrogenated
Tallow
Fatty Acids

MADE FOR TWO REASONS:

Whiteness
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Searching for fatty acids that resist rancidity and impart extra whiteness to your product? Then you will want to know more about HYDROFOL 410 and 420. Check these specifications:

HYDROFOL 410		HYDROFOL 420
201-206	Acid No.	204-209
202-207	Saponification Value	205-210
1.0 Max.	Iodine Value	1.0 Max.
58.5-61	Titre °C	54-56
10Y/1R	Color (5¼" Lovibond)	10Y/1R

These acids contain less than 1% unsaturated fatty acids. They are extremely white in color and resist darkening even at elevated temperatures. The low iodine number of both HYDROFOLS makes them practically resistant to oxidation or rancidity. HYDROFOL ACIDS 420 contains a ratio of palmitic to stearic that approaches the trade concept of stearic acid.

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PRODUCTION . . . . .

EQUIPMENT

Gas Prober: The Norelco X-ray absorption gas analyzer, latest offering of North American Philips Co., Inc. (Mount Vernon, N.Y.), is designed for rapid quantitative work in chemical and related fields. The instrument features a monochromatic X-ray beam, which, it is claimed, permits greater accuracy than was previously obtainable in absorption measurements. It detects elements of high atomic weight in gas mixtures, determines the amount present, continuously records on a strip-chart the mol per cent of primary gas in the diluent.

•

Process Pumps: Series H Durcopumps, now available from The Duriron Co., Inc. (Dayton, O.), are engineered for continuous, heavy-duty operation at high heads and low capacity as well as routine transfer service. Construction features: large shaft and heavy bearings to minimize deflection, suction and discharge integral with pump casing, adapter assembly that accommodates several pump sizes to cover the entire range with just three standard bearing housings. Pumps are furnished in Durimet 20, Chlorimet 2 and 3, stainless steel, other special alloys.

•

Button, Button: Now there's a device to push the button initiating automatic control action. It's General Electric Co.'s (Schenectady, N.Y.) control initiating instrument—an all-electrical device that goes into action when important control variables reach predetermined values. Easily incorporated with standard switchboard instruments, the system electrically picks up signal from the instrument pointer, eliminates human error and the disadvantages which G.E. feels are inherent in present types based on mechanical contacts.

•

Tough Topping: Though it was developed primarily for laboratory equipment, Johns-Manville's (New York) new Colorlith sheet material is suitable for many other uses where heat-, impact-, and chemical-resistant work surfaces are required. Basically a mixture of portland cement and asbestos fibers, Colorlith is hydraulically compressed into dense, homogeneous sheets 48x96 in., in thicknesses from ¼ to 1¼ in.

(Advertisement)

CHEMICALS OUTLOOK

April, 1955

This news bulletin about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

IMPROVED FACILITIES FOR MAKING CAUSTIC

Generally speaking, most buyers look upon caustic soda as a standard, commodity item. However, it's not exactly the same wherever you buy it.

We at Wyandotte are constantly improving our products and our methods of making them. For example, within the past several months we have completed new facilities for the manufacture of our anhydrous grades of caustic soda. These new facilities include equipment for precision control of manufacturing conditions -- thus providing anhydrous grades of Wyandotte Caustic with even better flowability, and other desirable characteristics.

HELPFUL SERVICE FOR BUYERS OF CAUSTIC

But -- in addition to top quality and uniformity in all grades -- there are other factors that are important . . . and enter in when you are considering a source of supply for caustic soda.

One of these factors is service to the buyer.

As you may know, Wyandotte Chemicals is one of the oldest producers of caustic in America (1895). As a result of this long-time experience, many users not only look to us as a supplier of caustic, but also have come to depend upon us for advice pertaining to caustic -- its handling and processing.

For instance, we have designed complete caustic- and chlorine-handling systems for paper and bleach manufacturers. We've laid out storage and handling facilities for caustic in the soap, textile, and chemical-processing industries -- to name a few. We continually assist users in their safety programs. For buyers of liquid caustic, we have made comprehensive individual studies to determine whether savings could be made by changing from 50% to 74% concentrations.

Perhaps we can assist you in similar ways.

FREE 60-PAGE CAUSTIC BOOK

To help you get better acquainted with the Wyandotte Caustic story, we've prepared a 60-page book on the subject. A copy is yours for the writing. Why not write today?

Wyandotte CHEMICALS

WYANDOTTE CHEMICALS CORPORATION
WYANDOTTE, MICHIGAN • OFFICES IN PRINCIPAL CITIES

SODA ASH • CAUSTIC SODA • BICARBONATE OF SODA • CALCIUM CARBONATE • CALCIUM CHLORIDE • CHLORINE • MURIATIC ACID • HYDROGEN • DRY ICE
GLYCOLS • SYNTHETIC DETERGENTS (anionic and nonionic) • CARBOSE ® (Sodium CMC) • ETHYLENE DICHLORIDE • DICHLORODIMETHYLHYDANTOIN
CHLORINATED SOLVENTS • OTHER ORGANIC AND INORGANIC CHEMICALS

Last week, CW asked sales managers what they were doing about trimming sales expense. Here are the specific questions posed:

1. What changes are you making in manner of paying your salesmen? Why?
2. Has your company instituted any new regulations concerning amount or method of paying traveling expenses?
3. What switches are being made in field service? Are laboratories and technical service staffs concentrating on top customers only?
4. How much "heat" are you applying to step up number of sales calls? Or is emphasis now on quality?
5. Are you giving sales calls more or less centralized direction? What's current attitude on "smokestack chasing?"
6. Are you giving more attention to sales reports and their analysis, or making them more selective?
7. How are you handling small-order business—keeping, dropping, using more distributors?
8. To what extent are you cutting less profitable items from your line?

Sales Managers Trim the Waste Lines

Any sales manager worthy of his keep will argue convincingly that "you've got to spend money to make money." But of late, some of these same men, realizing how "high on the hog" they've been operating the past few years, are hard at work trimming the accumulated fat out of sales expenses. CW's latest survey uncovers just how extensive the more-efficient-selling movement is.

(Paragraph numbers follow questions in box, above.)

No. 1. Straight salary continues to be the usual compensation for the basic chemical salesman. Although some companies admit toying with a quota and bonus system in order to step up selling results, few will likely go through with such plans. Usual hurdle: no one can set fair figures that will make the salesman any happier than he is right now.

But some incentive plans have recently gone into operation. A well-known solvents producer has installed a salary-supplementing system. Another concern, in this case a Southern heavy chemicals maker, is satisfied with the quota plan it installed a short time ago. On a quarterly, wipe-the-slate-clean basis, the salesman gets 25% of all gross profit in excess of his quota.

No. 2. Travel and related expenses have been under closer scrutiny lately. In most cases, however, managers are either unable or unwilling to impose new restrictions; reason: loss of sales morale might result.

But some definite travel-cost cuts are being chalked up. Two of these:

- A Midwest seller has recently reorganized its men from the specialty to the full-line approach, claims an amazing slash in travel duplication without any noticeable loss of sales effectiveness.
- An achievement of which another company is understandably proud was its slicing of salesmen's car costs from 7¢/mile to 4½¢/mile. How? Through a leasing deal with a fleet-financing concern.

Telephone and related costs are being singled out by some managers as cost-cutting targets. One company, for instance, is pecking away at the problem through the use of stickers on the phones, asking, in essence, "Is this call necessary?"

No. 3. Field service on a free-to-all-comers basis is likely to continue, with few cutbacks possible. As an indispensable sales tool, particularly in cases of expanding lines, technical assistance is an unlikely source of cost cutting, most managers concede.

As a minor note of dissent, one company admitted it was becoming more selective in field service, placing more emphasis on trading service for orders.

No. 4. The old struggle of quality vs quantity of sales calls proceeds at an ever-swifter pace, with current honors slightly in favor of quality.

One manager described the difficulty this way: "Cost per call coupled with number of calls is probably the biggest sales problem facing managers at present." Cost per call, ostensibly reduced by making more calls, doesn't solve the difficulty of true expense trimming in terms of results. Most managers today are happy with five "good" calls daily.

No. 5. Centrally vs individually directed calls—that's a question upon which sales managers are almost equally divided. Those in favor of direction from the home office are emphatic in the value of such control. claim benefits from avoidance of expensive route retracing, more assistance from management, higher percentage of sales-producing calls.

One Midwest manager terms smokestack chasing as "fruitless," maintains, "It can break a new man's spirit if he makes 10 calls and all fizzle. We'd rather have him concentrate on cases that are at least 'suspect,' if not 'prospect.'"

On the other hand, some other leading companies are trending toward giving the ball-carrying to the man in the field, definitely cut down home-office direction. Reason: they rely upon the salesman's own sense of his customers' needs, believe that sales calls require only periodic reviewing

BROMIDES
for chemical processing

Hydrobromic Acid

A NEW, MODERN PLANT with new exacting controls and increased capacity is now producing Hydrobromic Acid at Michigan Chemical Corporation. Greater demand for this product as a brominating agent and for the manufacture of other bromides made this expansion necessary.

Why use HBr? Because bromide intermediates, made with Hydrobromic Acid, often provide a higher yield of finished products and more economical production.

USES: Bromides, intermediates, dyes, drugs, perfumes, sedatives, photographic emulsions.

Michigan Chemical Corporation, for almost twenty years a quality producer of chemicals, offers a series of pure bromides, among them being Ethyl Bromide, Monobromobenzene, Cyclopentyl Bromide and Hydrobromic Acid, specially made for use in pharmaceutical manufacturing. Write for further information or catalog.

MC*

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BASIC MANUFACTURER OF INDUSTRIAL, PHARMACEUTICAL AND AGRICULTURAL CHEMICALS

by the manager. Here, management effort is beamed toward encouraging the man to analyze and develop his own territory.

And on the far end of the scale, a few companies report they are inclined to let their men make unscheduled stops, "provided these don't interfere with bread-and-butter calls." One concern mentioned smokestack-chasing as of definite benefit to junior men, helping them to develop sales techniques.

No. 6. Consistently enough, the sharp line that divides the home-office-direction advocates from their opposite numbers also cuts between those emphasizing field reports from those minimizing them. Rule here: the more central control, the more reports to implement it.

On the "more reports" side, replies varied all the way from, "Reports are being watched closely for effectiveness and new leads" to the extreme case of the company that claimed, "We have the most elaborate sales report system you ever heard of. In a couple more years we ought to have a complete story on American industry . . . reports are analyzed in the field and at home."

Report advocates are convinced that, despite the headache of details thrust upon the salesman, in the long run reports will make his work easier, economize sales costs, "make the most of every travel dollar."

But those companies that regard sales reports as just so much unnecessary paper work build up a strong case; they claim that the most direct route to cutting sales costs is to cut all but the most essential paper work. One large producer avers, "We don't want the routine report. It doesn't do anyone any good, just takes time." And another discounts report value with, "Our men used to report every call. Now they turn in only the extraordinary encounter."

No. 7. Regardless of other disagreements, respondents were virtually unanimous in their efforts to cut high-expense-ratio small orders. Far and away, the most common method of cutting costs is to refer the customer to a distributor. The bare facts on expense are: in some cases cost of sales is found to be 15%-20%, working through the company's own force, only 5%-10% when selling through a jobber.

Although the distributor appears to be favored these days, producers are by no means in complete agreement as to the most desirable breakoff point between distributor and producer lots. Chief cause of argument: some makers feel that all less-than-carload business above the 55-gal. drum size represents potential tank-truck and carload sales.

Some other small-order handling trends were uncovered by the survey. Some of these:

- Dropping small packages, discontinuing items available on small-order basis.
- Setting up more local warehousing facilities.
- Offering more price incentives to encourage larger orders.
- Setting up firms specifically to handle small-order requests.

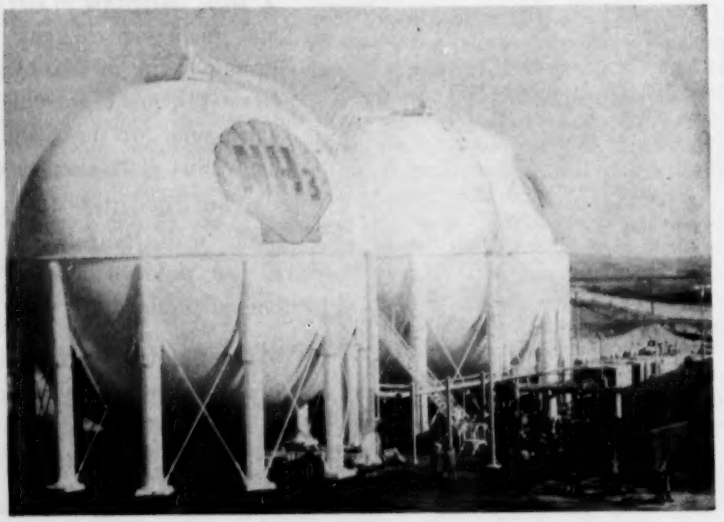
No. 8. There's a wide variation in the attitude toward dropping items. Although most companies agree that cutting a nonprofit item is good in principle, few suppliers are willing to jeopardize customer goodwill.

One major basic chemicals producer expresses the situation this way: "An item may not be profitable, but if it completes the line, it might be wise to hang on to it as a means of attracting other business."

Some of the bolder manufacturers, however, are approaching the problem along strictly cost-analyzing lines. An outstanding example is one concern that has cut over 25% of its line in the past two years. This maker is certain that "the industry as a whole could cut 10% and be the better for it."

Cutting—In All Directions: It's evident that today most sales managers are acutely aware of the importance of curbing rising selling expenses. More cost-slashing approaches are being tried or revived. Control systems are more common than ever before.

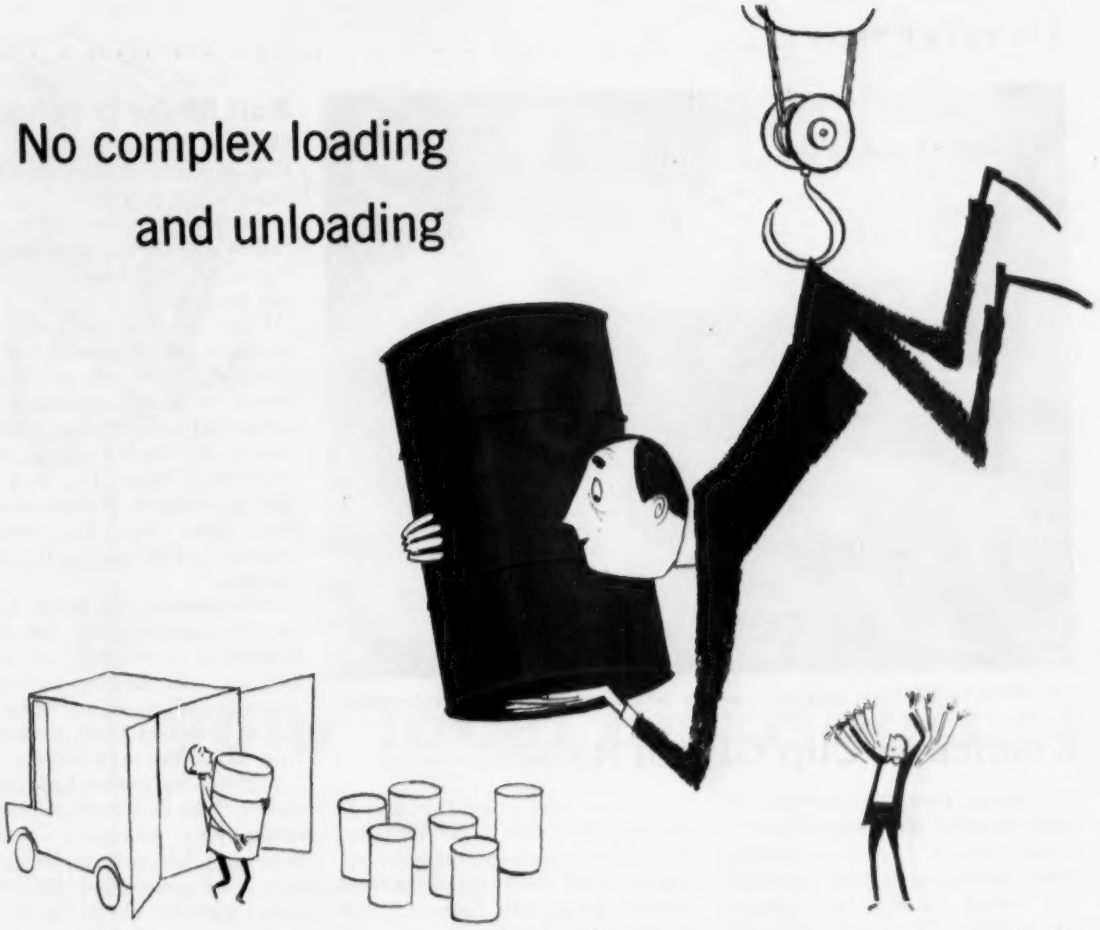
Efficiency and economy are the bywords. Some companies, of course, have always been known for their awareness of the cost of doing business. For them, these times of increasing competition and soaring costs will put their methods to the test.



Completing the Network

LAST LINK in its $2.75-million Pacific Northwest ammonia distribution system is Shell Chemical's new anhydrous storage terminal (*above*) at Pasco, Wash. Six years agrowing, Shell's Northwest system is now able to distribute 50,000 tons of agricultural ammonia annually. A company spokesman says Shell's water-route system (*CW, July 24, '54, p. 48*), operating since mid-January, has appreciably pared distribution costs of ammonia going to eastern Washington and Oregon.

No complex loading
and unloading



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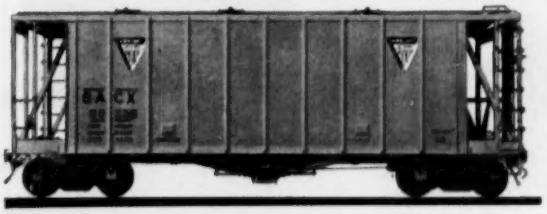

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Airslide cars now successfully shipping flour, semolina, sugar, starch, plastics, chemicals and other products

DRAIN DEVICE: Comic book abets cooling care, glycol removal, gas station profit.

Comics to Clip Glycol Re-use

This spring, Dow Chemical Co. will enlist the aid of psychology in another attempt to crack the toughest nut antifreeze manufacturers face: glycol reuse. Market research has indicated that 40-70% (*CW, June 26, '54 p. 69*) of antifreeze users reemploy part of their protectant. And to make matters worse, a large segment (to 30%) of service station operators continue to be oblivious to arguments against reuse and to profits in fresh glycol installation.

As part of an over-all public campaign to promote general cooling system care, Dow will try comic books to educate service station operators. The theory: if the book is left around a station, sooner or later attendants will absorb the contents.

A catchy title, "Road to Success," is calculated to entice readership. The attendant reads how an ordinary attendant (just like himself) can parlay cooling system care (antifreeze renewal) into owning his own station.

Because parts of the presentation urge oil, tire, and accessories promotion, oil company distribution is expected. Rounding out Dow's antifreeze education plans will be commercials on the firm's network shows, "Medic," "Tonight" and "Today," as well as ads in national weekly magazines.

All these will emphasize over-all cooling system care in general rather than simply discuss antifreeze discard. Inspection of hoses, couplings, temperature gauges and thermostats will be urged, for example.

Rail Strike Hits South

Shuttered plants and cold kettles loom in the near offing for chemical plants using facilities of the now-strikebound Louisville & Nashville Railroad. Preparations for plant shutdowns are already under way at several locations.

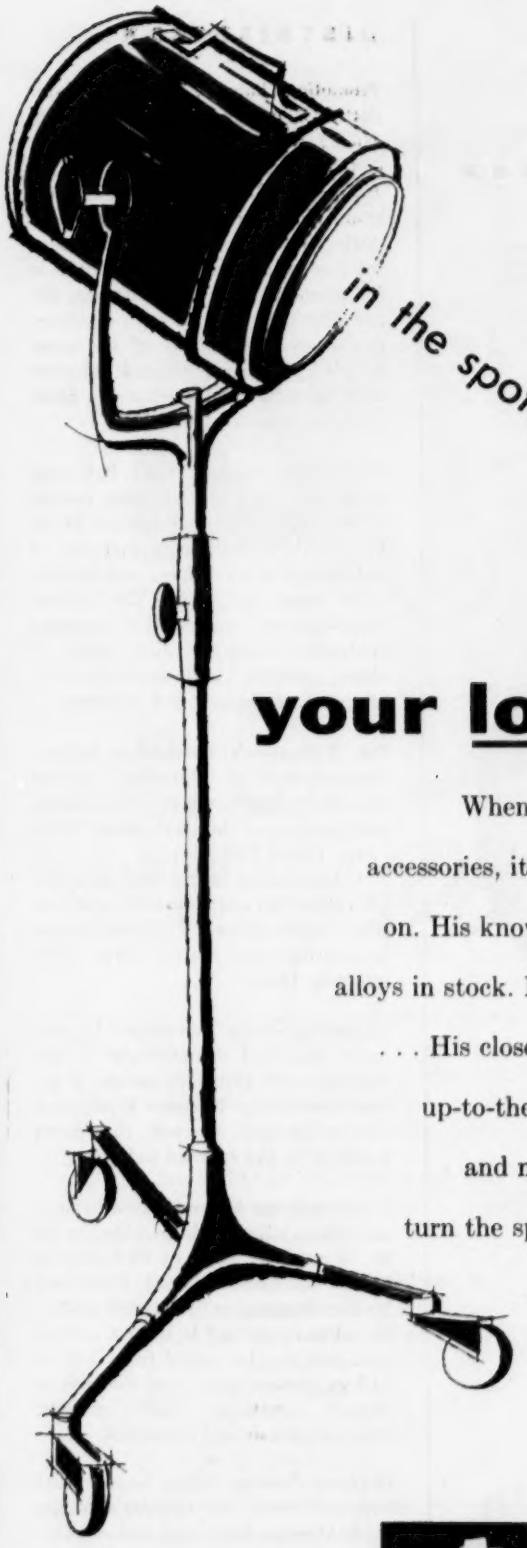
Phosphorus chemical plants of Monsanto, Shea Chemical, and Victor Chemical Works, all on the L&N system, are affected. National Carbon's carbon and graphite plant (Columbia, Tenn.), a Monsanto sulfuric acid installation (Cooper Hill, Tenn.) and Olin Mathieson's fluorine-consuming plant (Doe Run, Ky.) also will probably feel the pinch if the walkout continues.

Most companies are doing what they can with truck shipment, but this has limitations: availability of carriers, capacity, and loading facilities. A governmental emergency decree has upped truck-load limits in Kentucky from 42,000 lbs. to 56,800 lbs.

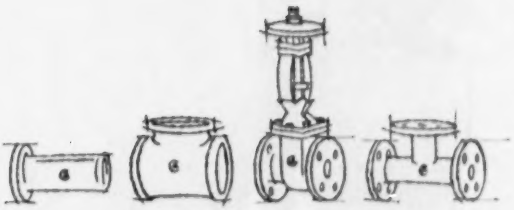
Negotiations between L&N management and the nonoperating employee's unions were continuing, with the President's chief mediator sitting in on some of the sessions, and official Washington watching closely for an early settlement.

For That Continental Look

CONSUMER CHEMICAL packagers may glean ideas from European-design cellophane packs to be seen at the National Packaging Exposition, Chicago, April 18-21. Shown here: American Viscose's Sylvania Division's display of Continental use of color and design, thought by some experts to be ahead of U.S. concepts.



in the spotlight . . .



your local distributor!

When the spotlight's on stainless steel valves, fittings and accessories, it lights up your local distributor as the source to rely on. His knowledge of your needs keeps the right sizes, types and alloys in stock. His extensive experience means fast, accurate service . . . His close association with our technical personnel guarantees up-to-the-minute information on proper selection, installation and maintenance. For the best in product line and service turn the spotlight on your local COOPER ALLOY distributor.

COOPER ALLOY
CORPORATION • HILLSIDE, N. J.
Valve & Fitting Division

Metal Hydrides'

Sodium Hydride in... Oil

means

New Convenience
New Safety

Plus higher yield, lower cost condensations

This new Metal Hydrides' reagent is a *ready-made dispersion* of micro-range sodium hydride crystals in oil. It means a safer, easier method of handling sodium hydride than possible with the ordinary dry powder. A semi-dispersion requiring no complicated preparation — Metal Hydrides' sodium hydride is ready-to-use — — — just pour from the shipping container directly into your reaction system.

Take advantage of the higher yields now possible at lower cost. Contact Metal Hydrides sales engineers *now!*

PIONEERS IN HYDROGEN COMPOUNDS

MH **Metal Hydrides** INCORPORATED

22 Congress Street, Beverly, Massachusetts

DISTRIBUTION. . . .

Promoting Sales Literature: Wyandotte Chemicals Corp. (Wyandotte, Mich.) will run its calcium chloride distributor contest again (*CW, April 10, '54, p. 87*) but with a different goal. This year Wyandotte offers its dealers prizes for the "most successful way to use company literature in the promotion of sales." Last year distributors competed in a 75-words-or-less contest on which of the company's leaflets were the most effective from an advertising viewpoint. Some leaflet revision resulted.

•

Broadening Product Use: Polyester-reinforced fiber glass is now finding its way into milk truck bodies: Strick Co. (Philadelphia), manufacturers of lightweight truck trailers and bodies, offers such a truck. The plastic home-delivery wagon, the company contends, is corrosion-free, easier to clean, sanitary, and impervious to temperature changes and moisture.

•

For Tomorrow's Reference: Sodium dispersions—28-p. brochure covers principal applications, preparation, and handling of the alkali metal. Ethyl Corp. (New York City).

• Laminating resins—technical bulletin describes characteristics and possible applications of phenolic-type laminating resins. Synvar Corp. (Wilmington, Del.).

•

Expanding Sales Coverage: Maintenance chemical manufacturer R. M. Hollingswood Corp. (Camden, N.J.) has selected the Brandon Equipment Co. (Chicago) to sell the firm's products to the railroad industry.

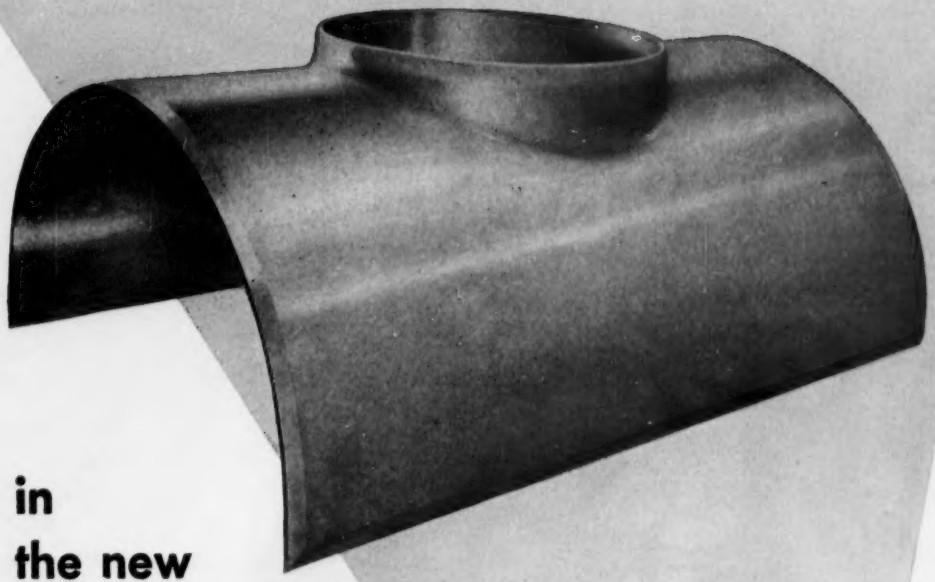
•

Products in the Future: A new form of amorphous silica has been added to the list of products made by Philadelphia Quartz Co. (Philadelphia). Described by the company as "light and white," the silica is claimed to have a surface area that can be varied from 135 to 215 sq. meters/gram, may find use in surface coverings, inks, greases, pharmaceuticals and cosmetics.

•

Hoppers Coming: More hopper cars will soon swell the country's rolling stock. Western Maryland Railway Co., alone, plans to add a hundred 70-ton covered cars to tote soda ash, feldspar, cement, and other bulk materials. Recently, Pennsylvania Railroad did the same thing, placed an order for 300.

Here's what we mean by FLUED DOME



in the new acf-built DURADOME tank car

Notice that *smooth, unbroken curve* at the base of the dome—and the extra heavy-gauge steel throughout the full top center section. What used to be the weakest part of the tank car is now the strongest! It took a giant new million-dollar press to make that curve possible. Never before could a full top-center section of a steel tank car be perfectly *flued* to eliminate the weaknesses found in old-fashioned dome construction.

Only DURADOME tank cars give you the advantages of: *much easier cleaning . . . far better application of lining . . . greatly increased structural strength . . . unequalled resistance to corrosion.*

But there's more to the story—much more! Ask your Shippers' representative about the new *standardized underframe . . . all-welded insulation jacket . . . pressure-type construction.* You have a world of new benefits—at no extra cost—in the new, years-ahead DURADOME!

Specialists for over 35 years in the leasing, operation, maintenance and servicing of tank car fleets — now exclusive sales agent of acf *tank cars for industry.*

SHIPPERS SHPX CAR LINE

SHIPPERS' CAR LINE CORPORATION

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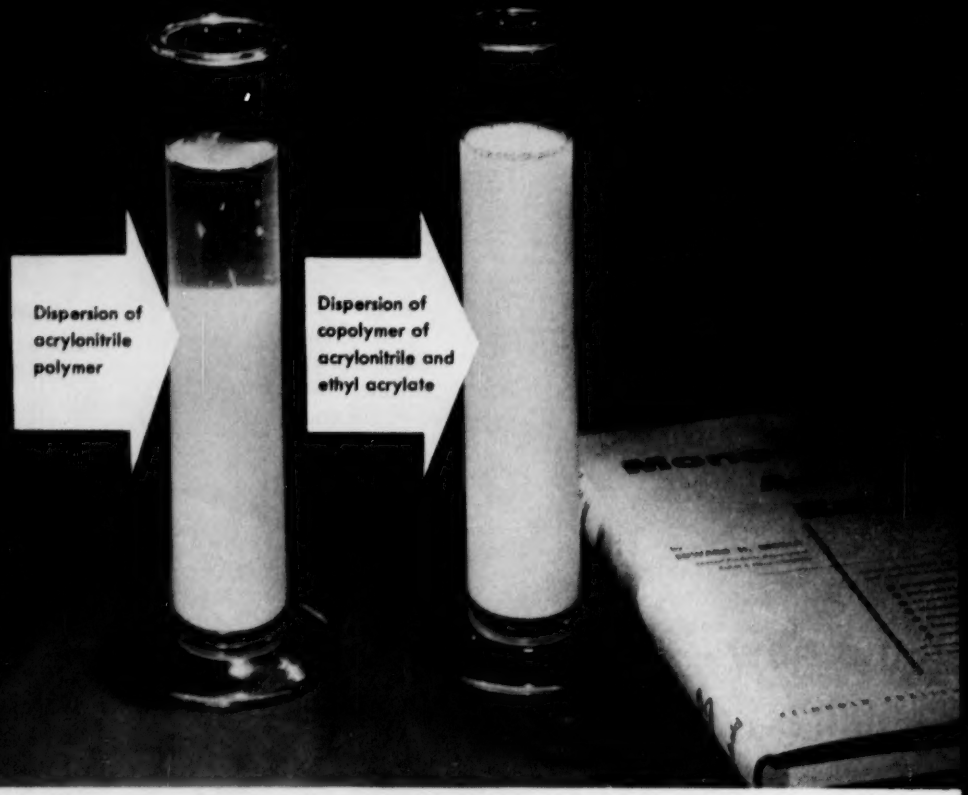
A subsidiary of acf INDUSTRIES Incorporated

Chicago, Ill. • Houston, Tex. • San Francisco, Cal. • Milton, Pa. • East St. Louis, Ill. • Smackover, Ark. • Tulsa, Okla. • North Kansas City, Mo.



How to Keep Your Emulsions Under Control:

Use Rohm & Haas Acrylate Monomers

The stability of polymer dispersions is often improved by emulsion copolymerization with acrylates. A case in point is acrylonitrile. The emulsion polymerization of acrylonitrile usually yields a highly unstable dispersion—one in which the polymer rapidly settles. But when ethyl acrylate is used as 25 percent of the monomer mixture, a well-dispersed latex of excellent stability is produced. Similar results are obtained when ethyl acrylate is copolymerized with vinyl chloride or methyl methacrylate.

Improved emulsion stability is just one advantage of copolymerization with acrylate monomers. Other advantages include permanent internal plasticization, improved aging properties, and increased compatibility with plasticizers and other resins.

Write Dept. SP for authoritative literature on acrylate monomers.

Rohm & Haas acrylic monomers include:

- Methyl acrylate
- Ethyl acrylate
- Butyl acrylate
- 2-Ethylhexyl acrylate
- Methyl methacrylate
- Ethyl methacrylate
- Butyl methacrylate
- Hexyl methacrylate
- Decyl-octyl methacrylate
- Lauryl methacrylate
- Stearyl methacrylate
- Glacial methacrylate acid

CHEMICALS FOR INDUSTRY

ROHM & HAAS COMPANY

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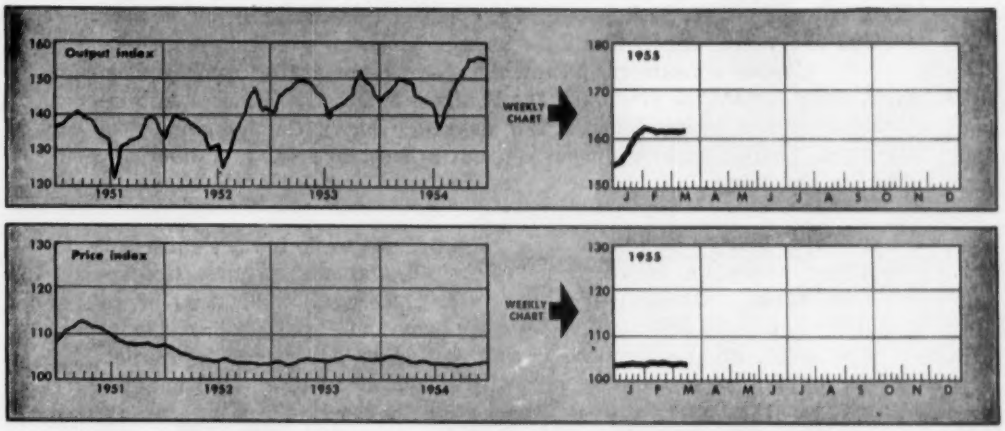
Representatives in principal foreign countries

MARKETS . . . . . .



WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947-49=100)	162.1	161.9	148.9
CHEMICAL WEEK Wholesale Price Index (1947=100)	103.9	103.9	104.3
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.)	373.7	367.1	272.4

MONTHLY INDICATORS—Production (Index 1947-49 = 100)	Latest Month	Preceding Month	Year Ago
All Manufacturing and Mining	135	131	126
All Chemical Products	155	152	144
Industrial Chemicals	172	169	150

MARKET LETTER

Consumers of metal-derived chemicals continue to be cuffed by shortages in basic material supplies. Copper and nickel products, in particular, get scarcer because of the squeeze. Unhappy effect: higher prices.

Nickel salts users, for example, are paying premiums for the little material available; and the copper escalating (*CW, March 12, p. 85*) is restarting. Copper cyanide moved up another 5¢/lb. late last week, and, earlier, copper oxychloride was raised 2¢. The former's tag, 20,000 lbs. or more, is now 70.7¢; the oxy level, on the inside of the range, is 46¢/lb. (drums, works).

You can pick up a fair amount of comment in the trade that copper sulfate, too, is about ready to break away from its current slightly more than 18¢/lb. peg.

•

But all the nonferrous news isn't bad. Out of Washington comes word of additional relief for strapped users of metal, and of course, the lined-up chemical customers. The Office of Defense Mobilization—on a direct suggestion by Commerce Secretary Weeks—will divert to industry some 3 million lbs. of nickel, previously earmarked for the stock pile. The rate: a million pounds/month through the second quarter. The source: the government's Nicaro, Cuba, plant. (The arrangements are similar to those in effect during February and March.)

Only two days earlier in the week, the government succored the aluminum consuming trade, canceled 150 million lbs. of aluminum

stock pile deliveries scheduled through June 30. The result, says Reynolds Metals president, R. S. Reynolds, Jr., "will enable the industry to avert serious shortages, shutdowns . . . unemployment. . ."

Copper consumers, meanwhile, have been getting some government metal to ease the pinch, but the Business & Defense Services Administration, and other agencies, a few days ago heard the industry plead for more. There's nothing official yet, but a boost in stock-pile diversions may be upcoming.

•

No hike or decline in sight. That seems to be today's consensus regarding prices on ethyl alcohol. The 40¢/gal. tag, (pure, tax-free material, tanks), written early last year, gives every indication of remaining officially *in statu quo*, at least for sometime.

Brisk ethanol demand is not limited to any particular outlet; rather, business is good, generally, with pharmaceutical and solvent customers merely lingering a little longer at the counter. There's no worry, though, that any buyer will be shorted—there's ample production around to satisfy all calls.

•

The same can be said about nicotinic acid (niacin). Supplies are in good shape, and sellers are certain that productive potential is high enough to meet any expected increase in demands. And hoped-for additional business is behind last week's first-in-five-years price cut.

The across-the-board reductions—amounting to $1/kilo—alter niacin tags, which have remained steady since Dec. '50. This is in dramatic contrast with the sliding toward lower levels evident in prices of just about all other synthetic vitamins. Reasons for the unnicked nicotinic schedules: no lag in consumption rate over the past few years; no buffeting from imports. These factors have often depressed prices of other such products.

•

How more diammonium phosphate will affect the market is a question stirring up a row in Washington these days. Despite the possibility that some congressmen may try to block the program—via a rider to the TVA appropriations bill—the agency announces that it will begin production and distribution of the material.

TVA plans to utilize facilities previously used for triple superphosphate to turn out about 40,000 tons of the ammonium salt. Perhaps half that amount will be distributed when—and if—the project gets under way.

Word in the trade is that the two current private producers of diammonium phosphate may back TVA's venture, actually join in and hope to profit by its educational and demonstration program.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending March 28, 1955

	Change	New Price		Change	New Price
UP					
Copper cyanide, tech., bbls., 20,000-lb. lots or more	$ .05	$ .707	Carnauba wax, refd., pure, bgs., ton lots	.01	.73
Copper naphthenate, liq., 8% Cu., drms., frt. alld.	.005	.24	Carnauba tech., bgs., ton lots	.01	.67
DOWN					
Bis phenol-A, c.l. or trucks, f.o.b., wks.	$ .01	$ .2825	Tankage, animal, feeding, 9-11% ammonia, bulk, NY, unit-ton	.25	5.50
Nicotinic acid, USP, drms., frt. adjust., kilo	1.00	8.00			

All prices per pound unless quantity is stated.

Autoclave of Annealed Ductile Cast Iron... the first pressure vessel made by the Cooper-Bessemer Corp., Mt. Vernon, Ohio. Designed and approved for internal pressure of 350 p.s.i. at 300°F. with jacket pressure of 125 p.s.i. at 350°F. Oval manhole cover, blind flange, two agitators and thermometer well are also of annealed ductile cast iron to ASTM Spec. A-339-51-T. Body weight: 18,485 lb. Cover: 5,000 lb.

Ductile Cast Iron

Specified for Pressure Vessel

This 600 gallon autoclave of ductile cast iron is for use in a methylation process.

Unlike conventional flake graphite cast irons, ductile iron has a spheroidal graphic microstructure. That's why its mechanical properties are closer to those of steel than to those of gray iron.

Take a look at these test figures from heats used for the autoclave:

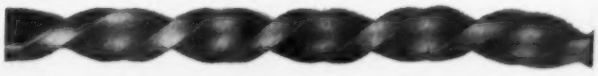
Ultimate tensile strength, p.s.i...64,500/69,700

Yield strength, p.s.i.....49,000/54,700

Elongation in 2"%.....19.5/23.5

Combining the process advantages of cast iron and the product advantages of steel, ductile cast iron is a logical material for process equipment.

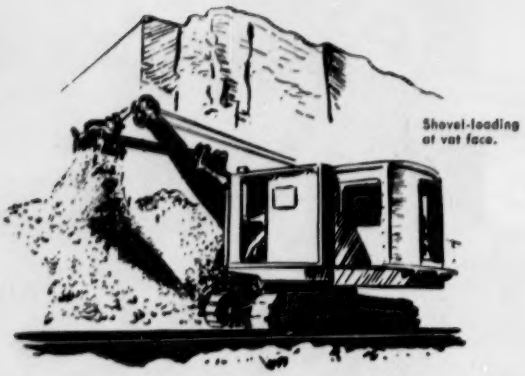
See for yourself how this economical iron . . . several times stronger than gray cast iron, and up to twelve times tougher . . . can help you. Send for a copy of "DUCTILE IRON, The Cast Iron THAT CAN BE BENT!" This booklet is yours for the asking. Write for it now.



ductile iron... the cast iron that can be twisted and bent

INCO
TRADE MARK

THE INTERNATIONAL NICKEL COMPANY, INC. 67 Wall Street New York 5, N.Y.



Shovel-loading at vat face.

Crude Sulphur

for Industrial Use

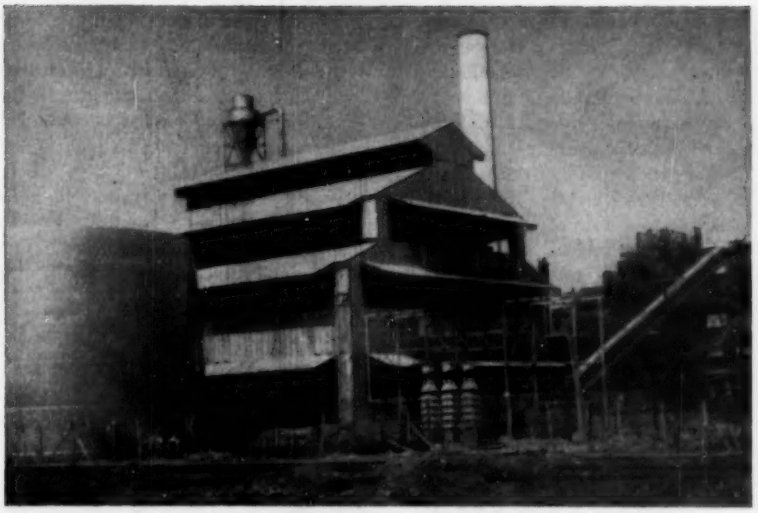
from the properties of

Texas Gulf Sulphur Co.

75 East 45th Street • New York 17, N. Y.

Producing Units

- **NEWGULF, TEXAS**
- **MOSS BLUFF, TEXAS**
- **SPINDLETOP, TEXAS**
- **WORLAND, WYOMING**



BAGASSE in West Indies, corn cobs in U.S. share one outlet.

Furfural: Now There Are Two

Much like a babe born with a silver spoon in its mouth, newly developed bagasse-derived furfural this week begins its industrial life with a profitable guaranteed market. Du Pont, long a big-time consumer of furfural, has handed Central Romana By-Products (a division of South Porto Rico Sugar), a 10-year contract for bulk of the output from a plant, just now approaching full scale (see cut), at La Romana, Dominican Republic, hard by the firm's already-operating sugar refinery. Central Romana trickled its first furfural, using the bagasse process, a few weeks ago from the (estimated) 30-million-lbs./year plant.

Thus, Quaker Oats, furfural pioneer and only major producer in the U.S. since the early '20s, moves over for a new maker. Both, however, are tied to at least one common outlet. Du Pont for many years has dipped deeply into Quaker Oats' 100-110-million-lbs./year furfural production pot.

And it was Du Pont that coaxed South Porto Rico into the Dominican venture.* It happened about a year ago, when the U.S. company, seeking to increase its furfural take (for production of nylon raw material, adiponitrile [*CW, Jan. 8, p. 55*]), was turned down.

Quaker Oats declined the proffered additional business, reputedly because it did not wish to expand its current furfural-from-corn-cobs operations.

Plant Proximity Key: Du Pont then turned to South Porto Rico Sugar. The lure: the latter's tremendous volume of sugar cane waste (bagasse) —more than any domestic sugar producer's. The cane waste is a handy source since the economics of furfural production demands large volumes of cellulosic material within a fairly restricted distance from the producing plant.

Quaker Oats, though, did not lose out in the deal between Du Pont and the sugar firm. The company arranged to supply South Porto Rico Sugar with construction and process information on a royalty basis.

As bagasse-based furfural becomes a commercial reality, there's still talk of furfural from another source: hardwood sulfite pulp liquor. At least one firm—the Brown Co. (Boston, Mass., and Berlin, N. H.)—may derive marketable furfural from wood pentosans after certain changes in its sulfite process. The Berlin, N. H., pulp mill, incidentally, is near Du Pont's Niagara Falls adiponitrile site.

With adiponitrile and nylon 66 as chief markets, furfural makers today can earmark 55-60% of their output for chemical intermediates (*see box*). By next year this percentage should rise even higher as more uses are found for nylon and such furfural derivatives as furfuryl and tetrahydrofurfuryl alcohols.

Solvent Takeout: Second only to the demands of nylon production are those for furfural as a selective solvent or in extractive distillation. The petroleum refining industry buys some 20-25% of the output annually for liquid-liquid extraction of lubricating oils, diesel fuels, catalytic cracker recycle stock, and other intermediate viscosity distillates.

Whether furfural, phenol, or Duo-Sol processes† are used, there's increasing pressure on the refiner to turn out high-quality lubricating oils, which minimizes the chance of highly

† Shell Oil Co. and The Texas Co. own the basic patents on the furfural refining process; the Texaco Development Corp. is the licensing agent. The phenol or JUIK process is licensed jointly by Standard Oil of New Jersey, Union Oil of California, Standard Oil of Indiana, and M. W. Kellogg Co. The Duo-Sol process, using cresylic acid and propane, is licensed by the Millwhite Co. (Houston, Tex.).

* U.S. Tariff Commission listed furfural free of duty as of Aug. 28, '54.

This Year Furfural . . .

Will Come From . . .	For Consumption In . . .
Quaker Oats Co., Chemical Dept.	Chemical intermediates 55-60% Furan (to adiponitrile, nylon), furfuryl alcohol (to resins); tetrahydrofurfuryl alcohol, furoic acid, etc.
Cedar Rapids, Iowa	
Memphis, Tenn.	
Omaha, Neb.	Lube oil (incl. gas oils) extraction 20-25%
Central Romana By-Products Co., Inc., (Div. South Porto Rico Sugar Co.), La Romana, Dominican Republic.	Butadiene extraction; synthetic resin* manufacture; wood rosin decolorizing; solvents; misc. 15-20%

* In addition to furfuryl alcohol (in chemical intermediates) used for resins.

Who makes the Clearest Pyrethrum Extract?

■ As the recognized pioneer in the development and processing of pyrethrum, MGK is the original and first producer of standardized pyrethrum extracts of brilliant clarity. In addition, we have developed excellent synergized pyrethrum concentrates, dusts and powders. If your insecticidal sprays, dusts or aerosols include the use of pyrethrum in any form, or the use of its companion product allethrin, write for the latest authoritative data. We also have available recent information concerning the most effective synergists, MGK 264 and piperonyl butoxide.

MCLAUGHLIN GORMLEY KING Company

1713 S. E. FIFTH STREET / MINNEAPOLIS, MINNESOTA

Methylene Chloride
Technical and Paint Remover Grades
Tricresyl Phosphate
Dioctyl Phthalate
Di-isooctyl Phthalate
Dibutyl Phthalate
Butyl Decyl Phthalate
Didecyl Phthalate

Manufactured by
KOLKER
CHEMICAL CORPORATION
600 Doremus Avenue, Newark 5, New Jersey
Telephone — Market 2-4085

oxidizable materials leaving deposits in automobile and diesel engines. Solvent refining, too, abets the refiner's investment in lubricating oil additives.

At the beginning of this year there were 20 domestic and 23 foreign furfural lube-oil refining units in operation; today 5 additional units are under construction. By comparison there was a total of only 33 domestic and foreign furfural refining units in 1948. Among the most recent furfural lube-oil refining plants to start operation are those of Petroleos Mexicanos in Mexico and Repesa in Spain.

All told, the domestic lubricating oil solvent extraction capacities by furfural and phenol at the beginning of this year were each about 80,000 bbls./day.

Add to these 43 furfural lube units, five additional ones for the extraction of gas oils or middle distillates. There are two such installations in this

Peroxide Push

THE SECOND of Britain's experimental peroxide-using submarines slides down the ways during launching ceremonies at Barrow-in-Furness, England.

Coincidentally, while this overseas hydrogen peroxide outlet was slipping into the sea, the U.S. Business & Defense Services Administration was issuing its second Chemical and Rubber report to industry. And included in the survey of this country's 1955 chemical outlook is a pertinent paragraph on hydrogen peroxide expectations, pointing out that one possible consumption booster is its use as an oxidant in propulsion devices.

Bleaching, and processing of fats and oils, of course, continue as the chief siphoners of peroxide, but should lesser uses expand their take, there'll be enough of the material to go around. A new nonelectrolytic hydrogen peroxide plant, now abuilding at Syracuse, N.Y., says BDSA, represents additional capacity beyond ODM's goal of 45.4 million lbs./year set for this January.

New *airborne* silica

Functionally unique because it performs more efficiently using very small quantities

What silica do you know, other than this new airborne CAB-O-SIL®, that will perform like this:

REINFORCING AGENT . . . where rubber compounds containing 22 parts Cab-o-sil per 100 parts of natural rubber have been formulated to yield tensile strengths of more than 4,000 pounds per square inch. High reinforcement is also obtained with GR-S, Butyl and Neoprene rubber polymers.

SUSPENDING AGENT . . . where "can stability" of paints has been improved with 0.1-2.0% Cab-o-sil, which retards the settling of high density prime pigments. Flow properties of such systems are also simultaneously controlled.

FLATTING AGENT . . . where flat varnishes formulated with 18% Cab-o-sil (based on total solids) have given 60° gloss meter readings of 35 on black carrara glass. After six months of storage, pigment settling is insignificant — 95% of the vehicle has been observed to contain suspended pigment.

THICKENING and GELLING AGENT . . . where small percentages of Cab-o-sil by weight are required to produce soft gels (corresponding liquids listed in order of decreasing polarity): 12% in water; 11% in ethylene glycol; 9% in butyl alcohol; 8% in turpentine; 7% in benzene.

THIXOTROPIC AGENT . . . where the addition of 1% Cab-o-sil to a nonthixotropic polyester resin has increased the viscosity from 410 centipoises (Brookfield viscosity) to 8,000 centipoises at 2 r.p.m. and 3,500 centipoises at 20 r.p.m.

ANTICAKING AGENT . . . where 10% Cab-o-sil has been used to prevent DDT from caking and 0.4% has produced a free-flowing sulphur.

ANTISLIP AGENT . . . here, antislip properties can be imparted to solvent base floor waxes by the addition of very small quantities of Cab-o-sil. A film of higher gloss also results.

TRANSPARENT EXTENDER . . . where the addition of 3.5% Cab-o-sil to a polychromatic automotive enamel permits adjustment of total pigment volume content to optimum durability without changing the transparency, color, or general appearance of the dried film.

Read about these and OTHER EXAMPLES of how Cab-o-sil can minimize the cost of various product and process improvements in the new technical bulletins now being offered with a free sample.

This new colloidal silica is prepared in a hot gaseous environment where "airborne" particles are formed almost instantly. This different process gives CAB-O-SIL remarkable properties that work together to cause unusual behavior.

Chemical and Physical Properties

Silica Content (Moisture-Free Basis)	99.0 – 99.7%
Free Moisture (105° C.)	0.2 – 2.0%
Ignition Loss (1000° C.)	0.2 – 1.0%
CaO, MgO	0.00%
Fe_2O_3	0.004%
Particle Size Range	0.015 – 0.020 micron
Surface Area (Nitrogen Adsorption)	175 – 200 m.²/gm.
Specific Gravity	2.1
Color	White
Refractive Index	1.55
pH (10% Aqueous Dispersion)	4.5 – 6.0
Oil Absorption (Gardner Method)	150 lbs. oil/100 lbs. pigment
Bulking Value	0.057 gal./lb.
Apparent Bulk Density	
Uncompressed	2.5 – 3.5 lbs./cu. ft.
Compressed	6.0 – 6.5 lbs./cu. ft.

Cab-o-sil is continuously available in commercial quantities.

Send now for a free sample and new technical bulletins containing valuable information.

Free CAB-O-SIL® SAMPLE AND BULLETINS

CABOT

Since 1882,
manufacturers of chemicals.
Cabot products include Carbon Blacks; Plastics Chemicals; Pine Tar Products; Dipentene; Charcoal; Coke; Cab-o-sil; Wollastonite; Alon C; Garnet; Kaolin; Petroleum; Natural Gas; Natural Gasoline; Gun Tubes; Oil Well Pumping Equipment.

WHITE PIGMENTS DIVISION CW,
GODFREY L. CABOT, INC.
77 FRANKLIN ST., BOSTON 10, MASS.

*Name*_____

*Title*_____

*Company*_____

*Address*_____

Please send CAB-O-SIL sample and:

( ) General Properties, Functions and Uses (#cgen-1)
( ) Cab-o-sil in Rubber (#cmis-1)
) Aqueous Dispersions of Cab-o-sil (#cmis-2)
( ) Cab-o-sil as a Transparent Extender for Automotive Enamels (#cpai-1)
( ) Cab-o-sil in Paints (#cpai-2)
( ) Cab-o-sil as a Flatting Agent for Varnishes (#cpai-3)
( ) Cab-o-sil in Polyester-Glass Reinforced Plastics (#cpla-1)
( ) Cab-o-sil in Plastics (#cpla-2)

KAY-FRIES

DIETHYL ETHOXY METHYLENE MALONATE

$C_2H_5OCH{=}C(COOC_2H_5)_2$

$R{=}C(NH_2)_2$ + $C_2H_5OCH{=}C(COOC_2H_5)_2$ → + $2C_2H_5OH$

Urea derivative

2-substituted-4 hydroxy-5-carbethoxypyrimidine

H_2NOH + $C_2H_5OCH{=}C(COOC_2H_5)_2$ → + $2C_2H_5OH$

hydroxylamine

4-carbethoxy-5-isoxazolone

R– + $C_2H_5OCH{=}C(COOC_2H_5)_2$ → + $3C_2H_5OH$ + CO_2

substituted-4-hydroxyquinoline

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country, and The Texas Co. will later this year bring onstream a third.

Here's how the furfural-using lube oil refiners underline their choice over phenol: a furfural solvent extractor, they say, costs less to build and to operate than one using phenol; furfural can be recovered more readily than phenol; furfural supplies have not been pinched as often as have those of phenol; and—a strong point—furfural prices have been, and are, exceptionally stable.

Volatility Switch: Liquid-liquid lube-oil process is not the only furfural extraction adaptation. Steady, too: extractive distillation of petroleum-made butadiene. Three butadiene plants in Texas—at Borger, Houston and Port Neches, use yearly about 5% of the national consumption of furfural. Orders will continue for the heterocyclic compound, since indications are that butadiene demand will remain strong at least through the rest of the year.

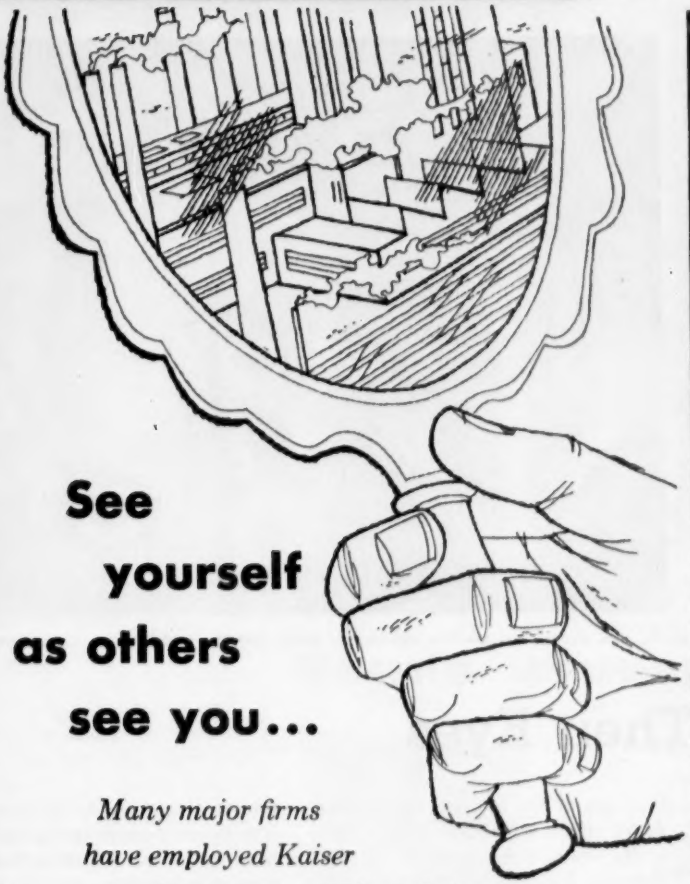
Unlike the steady growth in solvent extraction applications, furfural consumption in synthetic resins has paradoxically climbed and dipped at the same time. In phenol-furfural or phenol-formaldehyde resins, the curve is down; but sales via derivative furfuryl alcohol in resin cements are growing steadily.

U.S. output of phenol-furfural resins plummeted to 1.25 million lbs. in 1953, from 6.9 million the year before. The '51 total, 3.2 million, suffers in comparison with 1950's 7.0 million. The more recent production dive is attributed to TV cabinet manufacturers' switch from plastic to Masonite and metal cabinets.

By contrast, markets for acid-catalyzed furfuryl alcohol resins and cements are opening day by day—in tank and digester linings, cast-molded equipment, cementing and reinforcing of ceramics. Optimistically one company foresees structural applications for furfural-modified epoxy resins. Glass fabric-reinforced pipe and duct makers often formulate their own furfuryl alcohol resins.

Such new applications as these and slowly mounting sales to old-time outlets will spur furfural output. But for the next few years at least, there won't be much elbowing for furfural supplies. Combined Central Romana By-Products and Quaker Oats capacity is enough to sustain all users.

Capsule Case History:



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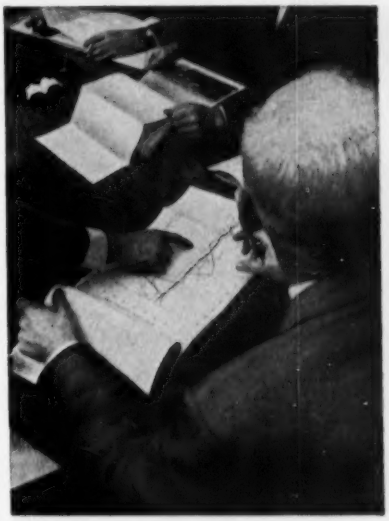

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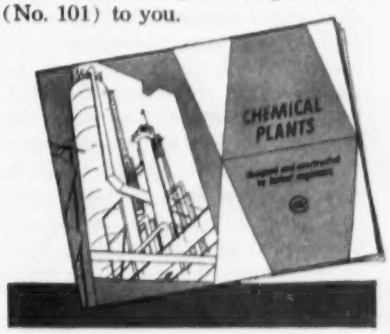

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'POLKA-DOT' PAINTING: On outside walls, and evaporator coolers, multicolor paints get the nod because customers like . . .

Spots Before Their Eyes

They're no novelty any more, the multicolor-in-one-coat, or "polka-dot," paints. Already, 25-26 firms are licensed to produce them in the U.S. and makers on other continents will likely soon join those here. (Currently, there are also manufacturers in Japan, Mexico and Canada.)

New manufacturers abroad, however, aren't the only fresh aspect of this phase of paint production. Now challenging the nitrocellulose multicolor lacquers, which have been dominant, with sales estimated to be about $3 million/year, is an acrylic many-toned paint devised by Magna Coatings and Chemical Corp. (Los Angeles). Magna has introduced one based on Rohm & Haas Rhoplex AC-33, and plugs it for some novel applications: on canvas, metals and masonry.

Home Grown: So far, most of the growth of the polka-dot paints has been in applications connected with housebuilding—the Levittowns (in both New York and Pennsylvania), for example, feature interiors finished with these special paints. Baby furniture and such appliances as TV sets have also been coated with the multicolor lacquers.

Such jobs make full use of the advantages of the coatings: novel decorative effects with just one coat (generally two or three colors at one time, although more can be offered); a thick film that hides cracks and imperfections; a speedily applied, inexpensive coating of considerable durability.

The major portion of the paints for these markets has been supplied by the smaller, independent paint and specialty coatings firms. Maas and Waldstein (Newark, N.J.) is admittedly the top firm (in output) in the field; Paramount Paint and Lacquer Co. (Los Angeles) is rated No. 2 (it was the first to introduce them). Some of the other well-known suppliers: Atlas Powder Co.'s Industrial Finishes Division (Stamford, Conn.), Baltimore Paint & Color Works, Glidden Co. (Cleveland), Reliance Varnish Co. Inc. (Louisville), United Lacquer Mfg. Co. (Linden, N.J.), Vari-Krom, Inc. (Hoboken, N.J.), and W. P. Fuller Co. (San Francisco).

Fuller and Glidden are two of the few in paint's "Big Ten" to produce the polka-dot finishes; Pittsburgh Plate Glass has recently developed one, but has not gelled its marketing plans.

Suspended Color: With the exception of Magna, which is seeking patents on its manufacturing techniques, major paintmakers license their multicolor paints under a patent (U.S. Pat. 2,591,904) issued to John Zola, and controlled by Coloramic Coatings Co. (Los Angeles). Licensees pay a royalty of about 5% on the sales volume.

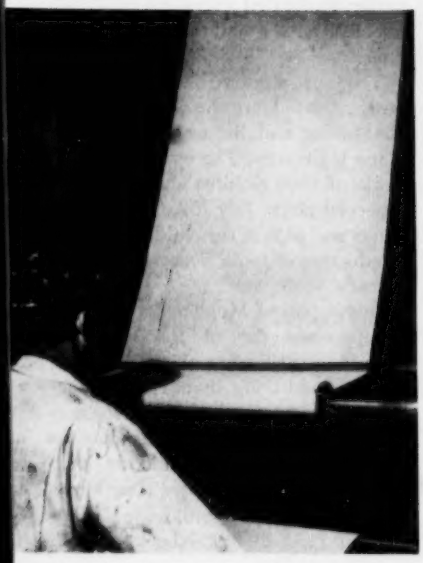
United Lacquer received a patent (U.S. Pat. 2,758,002) on manufacture of its Multakolor paint, but has not, so far, probed licensing possibilities.

In most cases, the multicolor paint is a water suspension of pigmented lacquer particles. But not all paints are lacquers; Atlas is said to have developed an odorless alkyd many-colored finish, and Magna has an acrylic vehicle.

By varying the lacquer particle size, and by careful regulation of the pot and nozzle pressures, considerable latitude in size of the dots is permitted. Tears, ovals, and flecks can be achieved by particle variation.

So far, all professional application is by spray. It is logical to assume that the large do-it-yourself market, however, is forcing makers to experiment with finishes that might be roller- or brush-applied.

Somewhat higher in price per gal-



AWNING SWITCH: To swap stripes for dots, multicolor paints.

lon than conventional paints, the multicolors can nevertheless be used at roughly the cost of other finishes—sometimes cheaper. A single primer coat is generally all that's used—(fillers are not needed with wood). Coatings 2½-5 mil thick can be produced easily in one spraying operation. The thick coating, however, is relatively porous; hence outdoor application, where protection is a main aim, hasn't been extensive.

Stripe Competition: Although the nitrocellulose lacquer multicolors can be applied to cloth, Magna claims to be the first to push this use heavily. With Western Canvas Finishers (Los Angeles), it has devised a system for draw-down application to canvas of the flecked paint (*see cut*). Said a Western user: "I'm sick and tired of applying stripes. With this new paint, we can come up with nearly any pattern we want, and produce a canvas that will outwear plastic, retain color longer than vat-dyed canvas."

Says Magna Secretary-Treasurer William March: "Fabric might turn out to be the largest single potential market, volumewise, for our acrylics in the U.S. Already 30,000 yds. of the painted canvas has been snapped up, and it's been on the market only two months."

Growth Spur: In the five years of their really extensive use, the multi-

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colors have made good, but unspectacular growth. Sales of $3 million/year is small in the billion-and-a-half-dollar paint business; the polka dots are still "just another part" of the output of even their largest producer.

Ahead, Coloramic sees sales climbing to $10 million annually. Perhaps now, with new applications and new paints, the sights can be raised even higher.

Adult Approach

Procter & Gamble unlimbered its big promotional guns last week for its newest product, the stannous fluoride-containing toothpaste, Crest. Quietly test-marketed about four weeks ago (*CW Newsletter, Feb. 26*) following publication of preliminary data on stannous fluoride dentifrices, Crest now gets the benefit of longer, more complete studies. Major selling point: unlike fluoridated water, the dentifrice benefits adults and children almost equally.

The new studies, like those previously reported, are the work of Joseph C. Muhler and his associates at Indiana University. The essence of their work: of 1500 children and 400 adults observed since July '52, 50% of the adults and 51% of the children showed a reduction of tooth decay after using the new toothpaste.

It was part of Muhler's job to see if unsupervised use of the dentifrice (brushings averaging about 0.8 times /day) would bring about caries reduction. He'd already gathered considerable evidence that stannous fluoride was the most effective fluoride form (roughly, in several tests, four times as effective as sodium fluoride). Happily for P&G—at least—the toothpaste

Bright License Boosts Safety

LEW WALDRON is a specialties maker with an eye for safety. He's recently come up with an idea that not only ought to reduce rear-end collisions, but should provide an outlet for such chemical industry products as acrylic plastics and Scotchlite. His invention is a self-contained license plate unit: a background sheet of Scotchlite, a stencil of numbers, and a Plexiglas cover, all in an illuminated metal frame. It's said to be visible at 1,000 ft.

Waldron, whose Columbia Chemical Co. (Chicago) sells chemical specialties such as room deodorizers, now has to sell his idea to legislatures to make it legally acceptable.

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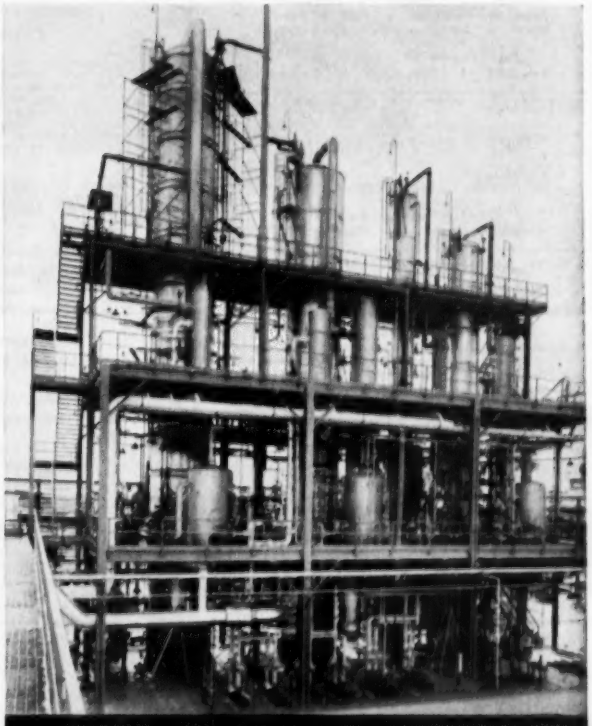

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has proved to be strikingly effective.

Second Try: Crest, the second of P&G's major toothpaste endeavors (Gleem, first big try, is reportedly doing well now) is a light-blue, pleasantly flavored paste, packed in a metal tube with a polyethylene spout. It is conventionally priced, contains 0.4% stannous fluoride in a formulation P&G is seeking to patent.

Marketed now in Rochester, N.Y (a city with municipal water fluoridation), Columbus, O., and Portland, Ore., it is pushed on the basis of the tests at IU. Promotion copy plugs it as a supplement, rather than a substitute for, the city water treatment.

About the future marketing plans of Crest, P&G is mum. But those who have observed how Gleem's heavy promotion has made that paste a major factor in the dentifrice field don't doubt that Crest will soon be a product to be reckoned with.

Catechol: Seed Saver

Good news for Colorado potato growers has turned out to be equally cheering for makers of catechol. Farm scientists at the Colorado Agricultural and Mechanical College, working with material supplied by Koppers Co., have worked out a process of treating pieces of seed potatoes with catechol to make them less susceptible to decay on storing, more resistant to soil fungus attack.

In recent years, many farmers have stopped using the cut seed potatoes because of losses to rot. For, although the parts do form a natural self-protective layer after they have been cut, the layer has often proved insufficient to withstand normal handling. Catechol treatment hastens formation of a tough protective skin on the part.

Treatment doesn't require a lot of chemical. It can be applied either in dust (the favored treatment) or in a liquid dip. The dust requires about 0.5% catechol in talc; the liquid, 0.15% catechol in water. Uptake of the dihydric phenol by potatoes is small—about 0.01 lb. per 100 lbs. in the case of dusts. But for catechol, a chemical in limited demand, the new use holds real possibilities.

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Wide-Range Resin: Paintmakers, ink producers, and others using dark resins are taking a look at Kerr-McGee Oil Industries, Inc.'s (Oklahoma City)

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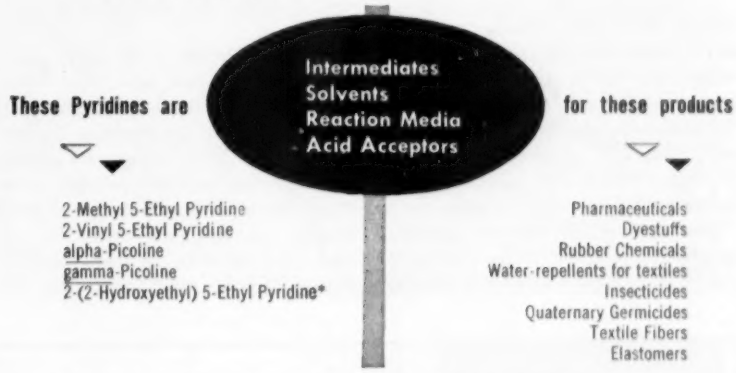

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new Kermac Resin 641. Features of the new product: close control of physical characteristics; good solubility; nongelling tendencies, good weatherability, inertness, and compatability with other materials.

•

Stripes that Stay: Traffic engineers have been seeking ways to make stripes—the guide line on highways and crosswalks – stay. Now, says Broadway Maintenance Co. (Long Island City, N.Y.) it offers Veon, a plastic traffic stripe compound that outwears best paints five to one.

Heaviest test of the new product, an alkyd applied hot to the pavement, has been on New York's Fifth Avenue, at 42nd St. Applied last year (*CW, July 31, p. 57*), it is still in good shape, although paints applied at the same time have given out. Other touted pluses: Quick application, immediate useability (cars can drive over it within 15 seconds), low cost.

•

Resistant, Odorless: A new paint, claimed to combine odor-free properties with good chemical-resistance has been introduced by Prufcoat Laboratories (New York). Designed particularly for the food and process industries, the paints can hold up to acid, alkali, and cleansing compound attack, dry speedily, can be scrubbed within 24 hours after application. The paints are similar to conventional odorless interior paints—are not water-thinned emulsions.

•

Paintmaker List: Members of the Federation of Paint and Varnish Production Clubs are listed for 1955 in a new Year Book. Aside from 3,460 names from 1,200 companies, federation officers, constitution and bylaws are given. Copies can be obtained from the federation's office in Philadelphia at $1.50/copy.

•

Draws Flies: Polack Frutal Works (Middletown, N.Y.), now has three new fly attractants to be used with pesticides, such as Malathion.

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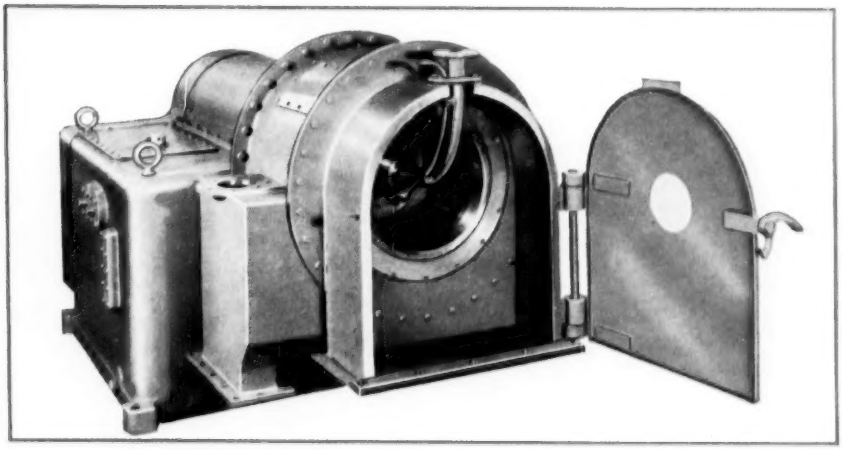

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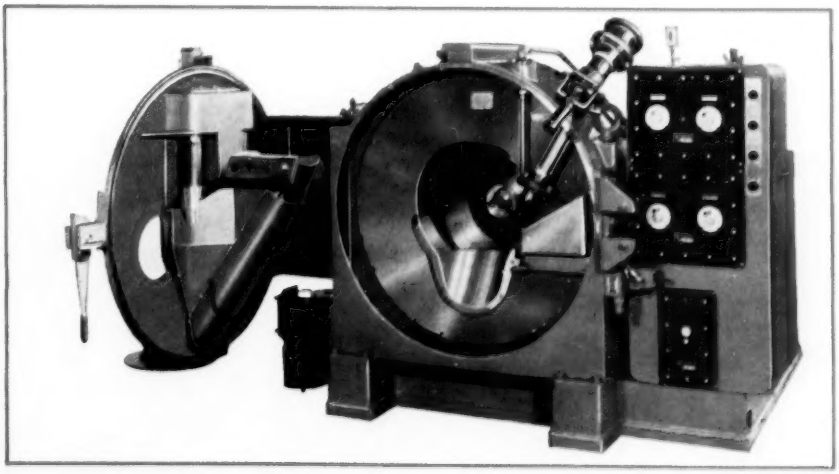

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